

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

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UNITED STATES, et al., : Civil Action No.:
: 1:23-cv-108
Plaintiffs, :
versus : Monday, September 23, 2024
: Alexandria, Virginia
GOOGLE LLC, : Day 11 a.m.
: Pages 1-181
Defendant. :
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The above-entitled bench trial was heard before the
Honorable Leonie M. Brinkema, United States District Judge.
This proceeding commenced at 9:04 a.m.

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COMPUTERIZED TRANSCRIPTION OF STENOGRAPHIC NOTES

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P R O C E E D I N G S

THE DEPUTY CLERK: Civil action number
1:23-cv-108, United States of America, et al. versus Google
LLC.

Will counsel please note their appearance for the
record, first for the plaintiffs.

MR. HENRY: Good morning, Your Honor. Ty Henry
from the Virginia Attorney General's Office on behalf of the
plaintiff states.

THE COURT: Good morning.

MS. WOOD: Good morning. Julia Tarver Wood from
the Department of Justice on behalf of the plaintiffs. With
me are my colleagues Aaron Teitelbaum, Jeff Vernon, Michael
Wolin and Katherine Clemons.

THE COURT: Good morning.

MS. DUNN: Good morning, Your Honor. Karen Dunn
for Google. And with me today are Eric Mahr, Sara Salem,
Tina Sessions, Bill Isaacson, Craig Reilly, Jeannie Rhee and
Matt Spalding.

THE COURT: Good morning.

All right. We're ready to proceed and I believe
we're going to have a live witness; is that correct?

MS. DUNN: Yes, Your Honor. Google calls Nitish
Korula.

THE COURT: All right.

1 THE COURT SECURITY OFFICER: Face the deputy
2 clerk. Raise your right hand.

3 Thereupon,

4 NITISH KORULA,
5 having been called as a witness on behalf of the defendant
6 and having been first duly sworn by the Deputy Clerk, was
7 examined and testified as follows:

8 (Time noted: 9:02 a.m.)

9 THE DEPUTY CLERK: Thank you.

10 THE COURT SECURITY OFFICER: You may be seated.

11 THE COURT: Mr. Korula, we're going to give you a
12 lapel microphone to hold up to your mouth, not right against
13 it, but we'll see how that works. All right.

14 THE WITNESS: Thank you, Your Honor.

15 BY MR. MAHR:

16 Q Good morning, Mr. Korula.

17 MR. MAHR: Your Honor, may I proceed?

18 THE COURT: Yes.

19 DIRECT EXAMINATION

20 BY MR. MAHR:

21 Q Would you please state and spell your name for the
22 record?

23 A My name is Nitish John Korula. The first name is
24 Nitish, N-I-T-I-S-H. My middle name is John, J-O-H-N. And
25 my last name is Korula, K-O-R-U-L-A.

1 Q And by whom are you employed, Mr. Korula?

2 A By Google.

3 Q Am I correct you hold a Ph.D.?

4 A That's right.

5 Q Do you prefer I call you Dr. Korula?

6 A I don't usually go by Dr. Korula but whatever you
7 prefer.

8 Q We'll stick with Mr. Korula then.

9 Would you please provide the Court with a brief
10 overview of your educational background?

11 A Yes. I grew up in a small town in south India where I
12 went to high school. In high school I discovered an
13 interest in mathematics and computer science. And so when I
14 went away to college, I decided to major in computer
15 science.

16 While there, I realized that within computer
17 science, my particular interests were in theoretical or
18 mathematical computer science, and so I decided to pursue a
19 Ph.D. in that field.

20 I came to the University of Illinois to do my
21 Ph.D. in theoretical computer science.

22 Q And what was the subject of your dissertation?

23 A It was NP hard problems for -- sorry, approximation
24 algorithms for some NP hardcraft problems which essentially
25 means problems that are too hard for a computer to solve

1 exactly in a short amount of time but often you can get very
2 close to an exact solution very quickly.

3 Q What did you do following your Ph.D.?

4 A I joined Google as a full-time employee.

5 Q What led you to join Google?

6 A A couple of things. I had actually thought I would go
7 into a career in academia but I found that many of the
8 academics that I admired were actually taking time off,
9 sabbatical and other things, to spend time with Google
10 because it was an interesting opportunity to compare the
11 theoretical work that we did and see how that applied at
12 many of the real problems that Google was dealing with.

13 Q Was there anything besides the nature of the work that
14 drew you to Google as an employer?

15 A The mission of Google was something that really spoke
16 to me and still does. I grew up in a small town in south
17 India. I was a kid who loved to read but the nearest
18 English language bookstore was about three hours away, and
19 so I read everything I could get my hands on. My mom was a
20 neuroanesthesiologist. I used to read her anesthesiology
21 journals. And I was always starved for things to read.

22 And then the Internet came to the town where I
23 lived towards the end of my time in middle school. And it
24 changed my life. I finally had access to all kinds of
25 information. I could learn about things that I had always

1 wanted to. And so Google's mission to organize the world's
2 information and make it universally accessible and useful
3 was something that deeply resonates with me.

4 There are millions or billions of children all
5 over the world who probably had even less access to
6 information than I did and being able to provide that to
7 them meant a lot to me.

8 Q Thank you.

9 Would you please briefly take us your work with
10 the display ads business at Google?

11 A Sure. I joined Google in 2010 but I was in the
12 research division for the first several years, though I
13 collaborated very closely with display ads teams.

14 In 2016, I moved over to display ads for the first
15 time full time. I started by managing the part of the ads
16 quality team and then the entire sell-side ads quality team
17 and eventually all of ads serving and quality for Google Ad
18 Manager, and I continued in that role until 2021.

19 Q Can you tell us some of the specific projects you
20 worked on related to display advertising during your time at
21 Google?

22 A There were a very large number, but they included
23 Enhanced Dynamic Allocation, reserve price optimization,
24 Dynamic Revenue Sharing, several others.

25 Q And what was the title again of the final role you

1 mentioned?

2 A I was the engineering director for ad serving and
3 sell-side ads quality.

4 Q Can you tell us what the ad serving and sell-sides ad
5 quality team at Google, what they did?

6 A Yes. So the ad serving team is responsible for
7 everything that happens in real time from when a user visits
8 a publisher's website or a mobile app and an ad request is
9 sent to Google which looks at all of the direct sold ads the
10 publisher might have, decides whether to run a programmatic
11 auction, sends bid requests to buyers, receives the bids,
12 runs the auction, applies various optimizations, and then
13 ultimately returns the ad to the user's device.

14 So all of that that happens in real time is the
15 responsibility of the ad serving team, and the quality team
16 specifically is responsible for continuously optimizing all
17 of that.

18 Q And just so we have the time period right, did you say
19 you were on those teams from 2016 through December 2021?

20 A That's right.

21 Q And that's the period I want to focus on when you're
22 answering questions.

23 But what did you do after you left display ads
24 business in 2021?

25 A I spent a year as the senior technical advisor to

1 Dr. Prabhakar Raghavan who's a senior leader at Google
2 reporting to our CEO. And then after that year, I joined
3 Google Assistant where I'm now an engineering director.

4 Q So you're still at Google today?

5 A I am, yes.

6 Q And despite formally leaving display ads in
7 December 2021, have you remained involved in the display ads
8 business since leaving?

9 A I've given several depositions and I guess I'm involved
10 in this trial now.

11 Q Can you provide the Court again with a high level
12 description of Google's display ads business from your
13 perspective as a lead sell-side engineer?

14 A Yes. Google refers products to publishers that help
15 them monetize their inventory or get paid for the ads that
16 appear next to the content they provide.

17 It also provides products to advertisers to help
18 them bid effectively and find the right advertising
19 opportunities for their ads.

20 And a large part of what Google does is to
21 facilitate matches between the two. So perhaps a large
22 publisher might be able to make direct deals with some large
23 advertisers but not with many medium and small advertisers,
24 and likewise a large advertiser might be able to make deals
25 with large publishers but not with the smaller ones, and the

1 small publishers and advertisers may not be able to make any
2 direct connections at all.

3 But we offer programmatic solutions that allow
4 effective matching so that we can serve the right ad to the
5 right user.

6 Q So you use the word effective matching. What do you
7 mean by effective matching? Don't publishers just want to
8 get the highest price they can for their inventory?

9 A That's certainly one important factor but not the only
10 one.

11 For example, publishers often have concerns about
12 the kinds of ads that appear on their website. They want
13 ads that are appropriate for their brand. Publishers might
14 not want ads from their competitors on their websites or in
15 their mobile apps. So there could be a number of factors
16 that go into it.

17 Q Does Google's display ads business include selling
18 advertising on Google's owned and operated products like
19 YouTube and its search page?

20 A No. We treat those separately.

21 Q Why is that?

22 A Because the ads on Google's owned and operated products
23 are how Google makes money from its own properties, whereas
24 the display ads business essentially is Google helping third
25 party publishers make money from the ads that appear on

1 their websites, mobile apps or other properties.

2 Q Does Google's display advertising business have any
3 relationship to the company's search business?

4 A Not a direct relationship but an important secondary
5 one in that the display ads business makes it easier for
6 publishers to get paid for the content that they produce.
7 And if publishers can do that, it makes it easier for them
8 to continue to produce more content as well as make that
9 content freely available to people without requiring them to
10 pay for it.

11 And so that very much ties into Google's mission
12 of the content being available means Google can organize it,
13 make it accessible to everyone.

14 Q So you mentioned that your role in display ads all
15 focused on the sell-side.

16 What products does Google offer on the sell-side?

17 A We offer three products: Google AdSense, AdMob and
18 Google Ad Manager.

19 Q And before we get into Google Ad Manager, would you
20 just explain briefly what AdSense is?

21 A AdSense is a product for publishers who in many cases
22 these are small websites, maybe they run a blog, maybe a
23 recipe site, but they want to focus typically on creating
24 the content and not on the details of how exactly it's
25 monetized. And so in many cases they just want Google to

1 manage that for them and then to just get paid at the end of
2 the month.

3 So that's essentially what AdSense does. It makes
4 it easy for them to just focus on the content creation.

5 Q And just to be clear there's no confusion, when you say
6 AdSense, is that the same thing as others might refer to as
7 AdSense for Content?

8 A Yes, that's what I'm referring to in this regard.

9 Q How long has Google offered AdSense to publishers?

10 A Oh, for a long time. Since before I joined Google, I
11 think since before we acquired DoubleClick.

12 Q Before what?

13 A Before Google acquired DoubleClick, I think.

14 Q Thank you.

15 What kind of ads does AdSense serve?

16 A AdSense can serve many different formats of ads. You
17 can serve traditional web banner ads, you can serve native
18 ads, you can serve some video ads, you can serve ads on
19 websites and HTML5 games, mobile apps through web views.
20 There's a lot of different types of ads that AdSense serves.

21 Q And how about sources of demand, what sources of demand
22 are available to publishers that are using AdSense?

23 A They get access to our Authorized Buyers, so that's
24 Google Ads, DV360, and all the other Authorized Buyers
25 including Criteo, MediaMath, AppNexus, Trade Desk, et

1 cetera.

2 Q Does AdSense run real-time auctions that those sources
3 of demands compete in?

4 A Yes, it does.

5 Q And is there any limitation at all in terms of the
6 access that AdSense publishers get to Google Ads demand?

7 A No.

8 Q The same as if through Google Ad Manager?

9 A Yes. It all works generally the same. They have
10 access to the same demand.

11 Q Just to be absolutely clear here, when we're talking
12 about Google Ads demand, what are we talking about?

13 A This is just I guess another way of referring to all of
14 the customers of Google Ads, the advertisers who use the
15 product.

16 Q Now, can publishers use both Google Ad Manager and
17 AdSense together?

18 A They can. That's quite common.

19 Q And how would they do that?

20 A When you create a Google Ad Manager account, you also
21 create an AdSense account if you don't have one already, and
22 then you can just have your programmatic ads fill through
23 AdSense. It's quite straightforward.

24 Q Do publishers using AdSense have to use Google Ad
25 Manager?

1 A No, certainly not. In fact, I think it's most common
2 for publishers not to.

3 Q Can a publisher using AdSense parrot with a third-party
4 ad server?

5 A Yes or an in-house ad server.

6 Q Sorry?

7 A I said, yes, they can or they can use an in-house ad
8 server as well.

9 Q The publisher's own in-house ad server?

10 A The publisher's own in-house ad server if they have
11 one.

12 Q Can a publisher choose to use AdSense without any
13 publisher ad server at all?

14 A Yes. And again, that's very common.

15 Q Okay. If you would turn to Tab 1 in your binder please
16 to DTX 173.

17 And, Your Honor, this was previously admitted into
18 evidence.

19 THE COURT: All right.

20 BY MR. MAHR:

21 Q Mr. Korula, would you please turn to slide 17 of this
22 deck? It's also on the screen if that's easier for you.
23 Just a quick question here.

24 Can you tell us how, if at all, the final row of
25 this slide relates to the testimony you just gave about

1 using AdSense without an ad server?

2 A Yes. That's exactly what this final row is referring
3 to. It says you can use AdSense for content with no ad
4 server and, as I said, that's very common.

5 Q Thank you for that.

6 MR. VERNON: Objection to foundation of how common
7 this is. Mr. Korula doesn't work in sales.

8 MR. MAHR: He --

9 THE COURT: All right. I'm going to sustain the
10 objection, but the point is it can be used. All right.

11 MR. MAHR: Yes.

12 BY MR. MAHR:

13 Q So let's turn now to Google Ad Manager.

14 During your years in display ads, what were your
15 specific responsibilities in relation to Google Ad Manager?

16 A As I said, I was responsible for the ads quality and
17 then the entire ads serving and ads quality team, so that
18 involved making sure that the auction and the ad selection
19 logic of Google Ad Manager was working correctly. I was the
20 person primarily responsible for that as well as several
21 other parts of the product.

22 Q And from your engineering perspective, would you again
23 very briefly because we've heard a bit about Google Ad
24 Manager but could you describe how you view the product?

25 A Yeah. Google Ad Manager essentially is a unified

1 product that gives publishers a lot of options for
2 monetizing their inventory. In particular, it combines the
3 functionality that we used to offer in DFP which allows
4 publishers to manage their direct sold ads with the
5 functionality that we used to offer in AdX or the ad
6 exchange which allowed publishers to make money from
7 real-time bidding or programmatic sales of their ads.

8 Q Did Google Ad Manager do anything more than just simply
9 combine the functionalities that were previously offered
10 separately as DFP and AdX?

11 A Yes. I'd say in three ways. First, it allowed
12 publishers to just get better and more unified information.
13 So for example, if a publisher wanted to know something
14 about how much money they were making from a particular part
15 of their website, previously they would have to go to the
16 DFP tool, run a report, see how much money they made from
17 the direct sales there, go to the AdX store, run a report,
18 see how much money they made from the programmatic sales
19 there, and then sort of combine them.

20 Whereas with DFP you can get unified reporting
21 on things like that -- sorry, with Google Ad Manager you can
22 get unified reporting.

23 Secondly, Google Ad Manager allows publishers to
24 make better decisions based on forecasts of how it will
25 affect the whole product. So for example, if a publisher

1 wants to know what would happen if I did a certain thing,
2 then Google Ad Manager can give them a better answer.

3 Let's say they have a direct deal with one
4 advertiser and they're contemplating a direct deal with
5 another advertiser, Google Ad Manager's forecasting tool can
6 tell them, well, this new direct deal will impact your
7 existing one in this way and impact your programmatic
8 revenue in this way. And then the publisher can decide if
9 this new deal is something that they want to go ahead with.

10 And third, Google Ad Manager just also offers new
11 functionality that just makes more sense. It would be hard
12 to do in a product that didn't actually unify the two. So
13 programmatic guaranteed ads are a good example of this
14 because they have some features of direct sold guaranteed ad
15 but also some features that come from the programmatic or
16 the real-time bidding world.

17 Q Would you please turn to Tab 7 in your binder where
18 you'll find DTX 213.

19 THE COURT: Any objection to 213?

20 MR. VERNON: Your Honor, there appears to be no
21 connection to this document and Mr. Korula. In the interest
22 of time, we won't object as long as we have the same leeway
23 on cross.

24 THE COURT: All right. That's fine. It's in.

25 (Defense Exhibit Number 213 admitted into evidence.)

1 BY MR. MAHR:

2 Q Looking at the first page, can you tell us what a core
3 team sell-side review is?

4 A Yes. The core team was one of the sub product teams on
5 Google Ad Manager. Josh Cohen was the lead product manager
6 for that team. And here they would be presenting a plan to
7 the sell-side leadership.

8 Q During your time at -- in the display ads and quality
9 team were sell-side team reviews a regular occurrence?

10 A Yes, they were.

11 Q Would you turn to page 26 of DTX 213.

12 And although you weren't in the sales team, did
13 you as a member of the ads quality team regularly take into
14 consideration publisher feedback in terms of the design of
15 the products under your responsibility?

16 A Yes, certainly.

17 Q Can you explain to us what the pie chart in the lower
18 left-hand corner of page 26 shows?

19 A Yes. So this chart is essentially showing that many
20 publishers want to view DFP and AdX data together at various
21 times. And so that would be the first benefit of the
22 unified product that I was referring to earlier, that they
23 could see all their information in one place.

24 And on the right side it describes some of what
25 those benefits would be.

1 Q Thank you.

2 MR. MAHR: You can take that down, Mr. Spalding.

3 Thank you.

4 BY MR. MAHR:

5 Q Now, when a new publisher signs up for Google Ad
6 Manager, is the publisher forced to use AdX?

7 A No, certainly not. In fact, they have to go through a
8 vetting process before they're permitted to use AdX.

9 Q Why do they have to go through a vetting process before
10 they get access to AdX?

11 A With the direct ad serving functionality, there's a
12 direct relationship between the publisher and the
13 advertiser. They in some sense know what they're getting
14 into, they're working directly with each other.

15 With AdX, Google is facilitating a match between
16 the publisher and an advertiser who perhaps haven't directly
17 agreed to it. And so we want to make sure when we allow
18 inventory on AdX, that the publishers that are permitted
19 there are carefully vetted to ensure they comply with our
20 policies. This is our product. We want to make sure that
21 what we represent to advertisers is actually high-quality
22 inventory.

23 Q During your time on the display ads team, did most
24 Google Ad Manager publisher customers eventually receive
25 access to AdX?

1 A No. Certainly not. Only a small minority of them.

2 Q Can you give us some sense of the proportion that
3 received access to AdX again during your time in display
4 ads?

5 A Yes. I would say it was about 20 percent. Maybe out
6 of about 65,000 some publishers, between 11 and 13,000 had
7 access to AdX. That number would vary a little bit over
8 time.

9 Q Are there different versions of Google Ad Manager?

10 A Yes. We offer the base Google Ad Manager product and
11 then Google Ad Manager 360 that offers some additional
12 functionality and controls and customization.

13 Q Why does Google offer two versions of Google Ad
14 Manager?

15 A Google Ad Manager, the base product, is already quite
16 flexible, but for some of our more sophisticated publishers
17 they might desire the need -- they might desire just more
18 controls, more ways to configure their complex businesses.

19 Q Is there a difference between what Google charges for
20 what I'll call the standard Google Ad Manager as opposed to
21 Google -- to GAM 360?

22 A Yes. The ad serving fees for Google Ad Manager 360 are
23 higher reflecting the additional functionality that it
24 offers. And for Google Ads -- I'm sorry, Google Ad Manager
25 the base product, we don't even charge any ad serving fees

1 at all up to about 19 million impressions a month.

2 Q And roughly about what percentage of your publisher
3 customers use GAM 360 as opposed to the standard version of
4 Google Ad Manager?

5 A Oh, only a very small minority use Ad Manager 360.

6 Q Have you prepared -- sorry, go ahead.

7 A Oh, I was going to say, I think it will be about 4 or
8 5 percent, something like that.

9 Q That use --

10 A That use Ad Manager 360.

11 Q Have you prepared a series of slides today to
12 demonstrate how a publisher goes about signing up for and
13 using Google Ad Manager?

14 A I have, yes.

15 Q And before we turn to your slides, you testified
16 earlier that you were Google's lead engineer with day-to-day
17 responsibility for the Google Ad Manager auction from 2016
18 through 2021; is that right?

19 A That's right.

20 Q In that role, did you develop a familiarity with the
21 core functionality of Google Ad Manager?

22 A Yes, a very deep familiarity.

23 Q Did you develop an understanding of how publishers
24 using Google Ad Manager can access that core functionality?

25 A I did, yes.

1 Q And has that core functionality changed in any material
2 way since you left display ads?

3 A Not in any material way, I believe. We constantly keep
4 making minor improvements to the product but not in any
5 significant way.

6 Q So just to be clear, do the slides that you prepared
7 reflect that core functionality as it stood when you were in
8 display ads from 2016 to 2021?

9 A Yes, they do.

10 MR. MAHR: With the Court's permission, Your
11 Honor, we would like to display a demonstrative to assist
12 Mr. Korula in providing his testimony. This would be Tab 2
13 in the binder.

14 MR. VERNON: Your Honor, let me raise one issue
15 briefly. This set of demonstratives includes what we
16 understand to be non-public -- not publicly available
17 information that was not produced in discovery.

18 In the interest of time, we've agreed to allow
19 counsel to proceed with them, but we are reserving the right
20 to object to that in the future.

21 THE COURT: All right.

22 MR. MAHR: May I proceed, Your Honor?

23 THE COURT: Yes, sir.

24 BY MR. MAHR:

25 Q Mr. Korula, can you tell us what the first slide in

1 your demonstrative shows?

2 A Yes. This is the home page of the Google Ad Manager
3 website. This is what you would come to if you typed Google
4 Ad Manager into your favorite search engine, and this is
5 where you can sign up to get started using the product.

6 If you were to click this blue Get Started button
7 on the top right, that's how you could sign up.

8 Q And going to the next slide, what happens after you
9 click the Get Started button?

10 A The publisher is asked a series of questions about
11 their business to help us recommend the right product for
12 them.

13 Q Can you go through some of those questions that are
14 asked?

15 A Yes. So the first question here the publisher is asked
16 to select one or more of these boxes, what best describes
17 your business, perhaps they're a web or video publisher and
18 they have a mobile app. Or perhaps they're not directly a
19 publisher themselves, they provide services to publishers.

20 So you check the correct answers here, and then if
21 you go back to the main slide, you can continue the process
22 with a couple more questions.

23 Q What other questions do publishers answer going to your
24 next slide when setting up the Google Ad Manager account?

25 A The next question they get asked is typically how many

1 monthly page views does the website get as a rough sense of
2 how large this publisher is, so they have to choose an
3 amount from this drop-down menu. Perhaps the publisher is
4 going to choose 1 to 5 million monthly impressions or
5 monthly page views.

6 And then once they've done that, they get asked
7 another question.

8 Q If you could go to the next slide. What's that next
9 question?

10 A Which essentially is about what features they're
11 looking for in the product.

12 So they can select again one or more of these.
13 Typically do they want a central place to monetize different
14 channels, different devices. Do they need something to
15 manage direct deals, manage competition between third party
16 networks. And then you might select one or more of these.

17 And after doing that, you have to answer a couple
18 more questions, and that basically completes the setup.

19 Q On the slide before you, what happens if a publisher
20 checks none?

21 A In that case, we might say well Google Ad Manager may
22 not be the right product for you. AdSense, for example,
23 might be a good fit for a publisher like that.

24 MR. MAHR: Move to the next slide.

25 THE WITNESS: And so here this slide shows what

1 that might look like. We'd say we might have a better
2 solution, AdSense might be a better fit for your business
3 needs, and the publisher can learn more about the AdSense
4 option.

5 Or if they want, they can continue signing up for
6 Ad Manager by clicking on that link there.

7 BY MR. MAHR:

8 Q So the publisher isn't required to switch to AdSense?

9 A No. They could continue to sign up for Ad Manager if
10 that's what they need.

11 Q If the publisher did choose to switch to AdSense, would
12 that publisher still receive access to all of Google Ad's
13 demand?

14 A Yes, they would.

15 Q After the publisher fills out this basic information
16 requested, what happens next?

17 A Pretty much you get started. You can start using the
18 product relatively soon.

19 Q Is Google Ad Manager customizable by the publisher?

20 A It's extremely customizable. This shows the home page
21 once you log into the product. And all of these options on
22 the left, this menu here, essentially those show many
23 different customizations that a publisher can apply or many
24 options they have.

25 Q Let's go a little deeper on some of those

1 customizations.

2 Can a publisher control the kinds of ads allowed
3 to be served on its inventory?

4 A Yes, they can. You might in many cases do that through
5 the protections menu that you see right here.

6 If you were to click on protections, as I think
7 the next slide will show, you get taken to this screen where
8 you can choose to create a new protection, and there's three
9 different types of protections.

10 Q Can you read the three types of protections?

11 A Yes. There's an ad content protection, a competition
12 protection, and an inventory exclusion protection.

13 Q Taking them in order, what is the ad content
14 protection?

15 A The next slide actually shows what that looks like.
16 This allows a publisher to say I don't want certain types of
17 ads to appear on my website.

18 So we block a lot of ads by default. Google has
19 policies about what kinds of ads can appear on AdX. But a
20 publisher might say, you know, I've seen lots of ads for
21 distasteful things like belly fat and so I don't want that
22 on my website, so I'm just going to block drugs and
23 supplements from appearing on my site.

24 We block -- of course, we block ads with viruses
25 and malware and things like that. We also block ads with

1 explicit sexual content. But a publisher could say, you
2 know, I want to go beyond that. Maybe I'm a family-oriented
3 website, I want to block even ads with any kind of reference
4 to sex. So you could use this option for that.

5 You could go still further. A publisher could
6 say, you know, I don't even want ads where there's any kind
7 of significant skin exposure. So you wouldn't see ads of
8 people on a beach, for example, if you were to select that
9 option.

10 So there's a lot of controls that publishers can
11 have to say what kinds of ads appear on their site.

12 Q Moving to the next slide, you also mentioned
13 competition protection.

14 What is that?

15 A Yeah. Competition protection allows publishers to say
16 that they don't want certain types of ads to appear
17 together.

18 So for example, if a publisher signed a direct
19 deal with Pepsi, they could say well I'll still accept ads
20 from Coke but I don't actually want the Pepsi ad and the
21 Coke ad appearing next to each other. So you can do that in
22 this way where you would select Pepsi and Coke, and then
23 those two ads with competition protection, that would keep
24 those ads from appearing together.

25 Q The third protection was inventory exclusion. What is

1 that?

2 And before you start, you have to tap the slide.

3 Okay.

4 A The inventory exclusion protection, which I think we'll
5 talk a little bit more about later, allows publishers to
6 block AdX from having access to parts of their web property.

7 Q Can a publisher use inventory to block AdX from all of
8 its inventory?

9 A They could. But if a publisher didn't want AdX, they
10 probably wouldn't go through the vetting process. So first
11 of all, they would have to go through that.

12 And then even if they were approved to use AdX,
13 AdX is not turned on by default. So if they didn't turn it
14 on, then they wouldn't need to turn it off using the
15 inventory exclusion protection.

16 But if they did go through the vetting and they
17 did turn it on, they could also use inventory exclusions to
18 turn it off everywhere.

19 Q Moving to the next slide, after a publisher has input
20 the protections it wants, are there ways to monitor which
21 ads have actually been shown on its properties?

22 A That's right. I think it's actually on the previous
23 slide.

24 And if we could go back. Right. So this is the
25 ad review center and here a publisher can see the actual

1 creatives, the visual images and text of the ads appearing
2 on their website.

3 So for example, this publisher is seeing ads from
4 Fiverr.com and Feverup and Post-Star and others; and if a
5 publisher decides, well, this particular ad that I don't
6 like, they can just click on this little Block Ad button
7 right here and then that ad will stop appearing on their
8 website.

9 Q You mentioned reporting and analytics.

10 What kind of reporting can publishers receive on
11 Google Ad Manager?

12 A Google Ad Manager offers very detailed reporting
13 functionality. So if you move to the next slide, we can see
14 that here a publisher can create a new report. You give it
15 a name, you specify what duration you want the report to run
16 over, what kind of inventory you might want. See web, app,
17 email, newsletters. And then you select what information
18 you want to include in that report, what metrics you're
19 interested in.

20 Q If we go to the next slide, can you walk us through how
21 that would work?

22 A Yeah. So you just scroll right down and then if we can
23 just play the slide, you'll see that the publisher can
24 choose from many, many different metrics. You can look at
25 impressions, you can look at clicks, you can look at

1 revenue, you can look at click-through rate. There's a
2 whole bunch of metrics. As you keep scrolling down this
3 page, there's a lot of different things you can get
4 reporting about.

5 And once you've selected all of the information
6 you want, this screen doesn't even show you all the ways you
7 can break down that information, then you can just click Run
8 at the bottom of the page, and then you'll get a report
9 generated with the information you want.

10 Q Is there a perhaps simpler way or summarized way that
11 Google Ad Manager allows a publisher to see how its
12 inventory is performing?

13 A Yes, there is. In fact, right on the home page you get
14 some of this information.

15 This is a test network so the numbers are small,
16 but you can see, for example, this publisher has made \$19 in
17 revenue. You get some information about impressions, CPMs.
18 So you see all of this right as soon as you log into the
19 product without having to run any report.

20 Also on the top right here, we show some
21 information about, you know, perhaps some insight that we
22 want to provide to the publisher. Saying in this case, hey,
23 there's been a 20 percent revenue decrease in the last seven
24 days for AdX, perhaps the publisher already knows why, but
25 if not, maybe it's something you can look into and you can

1 then dig into that.

2 Q All right. I'd like to now ask you some questions
3 about whether publishers can use Google Ad Manager while
4 working with other sources of demand.

5 Does Google Ad Manager allow publishers to work
6 with other sources of demand?

7 A Yes, it certainly does.

8 Q How so?

9 A Yeah. When you say other sources of demand, if you're
10 referring to non Google sources of demand.

11 THE COURT: I'm sorry, what was that?

12 THE WITNESS: Oh, I said, Your Honor, if you're
13 referring to non Google sources of demand, then I would
14 categorize them into three groups: The Authorized Buyers
15 besides Google Ads and DV360, header bidding commonly, and
16 Open Bidding.

17 THE COURT: Thank you.

18 BY MR. MAHR:

19 Q So let's go through each of those.

20 What are Authorized Buyers?

21 A Authorized Buyers are the buyers on our ad exchange
22 product. They go through a vetting process and they get
23 access to all of the AdX inventory, all of the inventory
24 that's made available to AdX by publishers.

25 We have hundreds of them, including Criteo,

1 AppNexus, The Trade Desk, MediaMath, many, many others.

2 And, yeah, they can bid on all of the AdX auctions.

3 Q Is there any difference between the access Authorized
4 Buyers get to Google inventory compared to the access Google
5 Ads or DV360 gets to that inventory?

6 A Here if by Google inventory you mean the inventory made
7 available on AdX, then, no, there's no difference. They all
8 get access to that inventory by default. Publishers always
9 have the ability to block a specific buyer from any specific
10 part of their inventory, but by default they all get access
11 to it.

12 Q Before leaving Authorized Buyers, I want to clarify a
13 point from Professor Lee's testimony.

14 Mr. Spalding, if you could please pull up the
15 public version of slide two from Professor Lee's testimony.

16 MR. VERNON: Your Honor, objection to Mr. Korula
17 testifying as an undisclosed expert witness referring to
18 Professor Lee's testimony.

19 THE COURT: I'm sorry?

20 MR. VERNON: We have an objection to Mr. Korula
21 testifying as an undisclosed expert witness if he's going to
22 be referring to Professor Lee's testimony.

23 THE COURT: Rather than the preface, just direct
24 his attention to whatever it is you want him to talk about.

25 MR. MAHR: Certainly. And we don't even need the

1 slide. I was just trying to orient the Court to what we're
2 talking about.

3 BY MR. MAHR:

4 Q But when Authorized Buyers are bidding on AdX, they
5 submit these bids on a CPM basis; is that right?

6 A That's correct.

7 Q Does Google have any knowledge about whether those
8 Authorized Buyers are charging their advertiser customers --
9 whether the Authorized Buyers are charging their advertiser
10 customers on a CPM basis or a CPC basis or some other basis?

11 A No. We have no such knowledge at all except for our
12 own Google buyers at Google Ads.

13 Q Does Google have any knowledge about anything
14 concerning about how those Authorized Buyers are charging
15 the advertisers that they're representing?

16 A No. We don't know anything about that, how much they
17 charge, on what basis they charge. All we see are the bids
18 that come into the auction.

19 Q Okay. So I'd like to go to the second category of non
20 Google demand that publishers can work through with Google
21 Ad Manager, and that you said was header bidding?

22 A That's right.

23 Q Can you tell us how a publisher can set up Google Ad
24 Manager to work with header bidding?

25 A Yes. So typically a publisher can work with the header

1 bidding partners and then create what we call price priority
2 line items in Google Ad Manager to represent those header
3 bidding ads.

4 And so what would happen is they would call the
5 header bidding partners before any call to Ad Manager is
6 made, receive bids from them, choose a winner from that
7 first header bidding auction, and then match that to the
8 appropriate price priority line item they've created within
9 Google Ads Manager.

10 Q And what again is a line item?

11 A A line item is essentially a unit of demand that you
12 can create in Google Ads Manager that you can use to
13 represent many different types of ads. So you would create
14 a line item to represent a specific direct sold guaranteed
15 ad campaign, for example. You could create a line item to
16 represent header bidding.

17 Q You said a price priority line item.

18 What is the price priority part of line item mean?

19 A A price priority line item means in contrast to say a
20 direct sold guaranteed line item where the publisher's made
21 a commitment for how much impressions to serve. The price
22 priority line item is non guaranteed and it's just
23 competing, as the name says, just based on its price.

24 Q Turning back to the slides, can you show us how a
25 publisher using Google Ads Manager would configure a price

1 priority line item to allow header bidding to compete for
2 its inventory?

3 A Yes. So it's pretty straightforward. This is the page
4 where you create a new line item. And you would give the
5 line item a name. In this case, something like Prebid
6 \$1.23. That might represent the name of the header bidding
7 partner. And \$1.23 may represent the price.

8 You would choose the line item type. As I said,
9 that's commonly price priority. And a priority value,
10 typically 12.

11 And then if you were to scroll down, which you
12 could see on the next slide, you'd see that you have to
13 choose some information like when you would want this ad to
14 start serving, when you would want it to end. And
15 importantly, in this context, you would actually choose a
16 price. And in this case, that would be \$1.23 perhaps as was
17 shown in the name, right.

18 And so the publisher might use this line item if
19 they got a header bidding bid of \$1.23.

20 THE COURT: So is it your testimony that that
21 price is set by the publisher but not set by AdX?

22 THE WITNESS: That's right, ma'am.

23 THE COURT: In all cases?

24 THE WITNESS: Yes, Your Honor.

25 THE COURT: Okay.

1 BY MR. MAHR:

2 Q And I was just going to ask, does the publisher control
3 the price assigned to the price priority line item?

4 A Yes. They can enter any price they would like here.
5 It doesn't even have to actually match the bid they get from
6 header bidding.

7 Q Why would a -- why might a publisher enter an amount
8 higher than the actual winning bid of the header bidding?

9 A The publisher could decide to do that for any reason,
10 for example, they're working with a header bidding partner
11 and they want to give that partner some kind of preference.
12 And so they could say if I have \$1 bid from header bidding,
13 I'm going to enter \$2 in here which means that the bid from
14 AdX or Open Bidding needs to be twice as high as the header
15 bidding bid in order to win. And you could do that to give
16 header bidding a boost, for example, if you wanted to.

17 Q And can you describe what you mean by a boost?

18 A Essentially you make it more likely for it to win the
19 auction, even if it weren't the highest bidder.

20 Q Is there any limit at all on the value that a publisher
21 can enter into that header bidding line item?

22 A No. I mean, the publisher can enter, you know, \$1, it
23 can enter \$10, \$100 or \$1,000. It's all fine.

24 Q Would the publisher have to do anything else to set up
25 header bidding?

1 A Not on the Google Ad Manager side. In fact, you don't
2 even have to go through all of these steps because you can
3 automate it. There's an API that we allow, so publishers
4 can create thousands of these header bidding line items just
5 by running a short program.

6 The publisher would have to do some work with the
7 header bidding partners, of course. But as far as Google Ad
8 Manager is concerned, that's it.

9 Q Does Google Ad Manager put any limit on how many
10 competing exchanges a publisher can connect to using header
11 bidding?

12 A No. We don't have any limit of that nature. A
13 publisher can work with any one of the many dozens of
14 exchanges that are out there. It's very common for
15 publishers to work with six or seven of them, say, but
16 there's no limit within Google Ads Manager.

17 Q Okay. Turning to the third way you identified for
18 publishers to access competing non Google demand.

19 It was Open Bidding. Can you explain how Open
20 Bidding works?

21 A Yes. So we developed Open Bidding in response to
22 header bidding via what we thought was a better solution
23 that was run server side that allowed publishers to connect
24 with multiple exchanges. And so they could get real-time
25 price competition between all of these exchanges while

1 Google made it really easy for that to work effectively.

2 Q And what did you mean when you said server side?

3 A Rather than a lot of the work for header bidding having
4 to happen on the user's device, what we call client side,
5 typically with header bidding the user's device would
6 initiate a call to many different exchanges, receive the
7 bids, run an auction on the user's device. Rather than
8 doing all of that, we could just do that on a Google's
9 server sitting in a data center somewhere.

10 Q When did Google launch Open Bidding?

11 A We were developing it over a few years but I think we
12 launched it to Open Bidding in 2018.

13 Q Why did Google launch Open Bidding?

14 A We did this in response to header bidding. We saw that
15 publishers wanted to work with exchanges in this way, and we
16 developed what we thought was a better solution.

17 Q Which competing exchanges can a publisher using Google
18 Ad Manager connect to through Open Bidding?

19 A Oh, we have about 25 of them I think. You can connect
20 with Index Exchange, with OpenX, with Magnite, with
21 PubMatic. There's a lot of different exchanges you can work
22 with.

23 MR. MAHR: And I just want to check to make sure,
24 is the microphone working all right for the Court and the
25 court reporter?

1 BY MR. MAHR:

2 Q So going back here to demonstratives, can you tell us
3 what this video shows?

4 A Yeah. So this video actually shows how a publisher
5 could start working with Open Bidding. You can -- here you
6 can choose a new bidder that you want to work with and these
7 list the ones we have, so you can see Index Exchange, or
8 Magnite, or OpenX, PubMatic, several others, SpotX and so
9 forth.

10 So the publisher can choose from among these. And
11 once they've done that, then they can actually go to set up
12 how that particular exchange works with Open Bidding.

13 Q Does the publisher have to have an agreement with each
14 of these competing exchanges in order for it to bid?

15 A We do require that publishers have an agreement but not
16 necessarily a preexisting agreement.

17 So for example, the next slide shows what this
18 could look like. You see that we say you need a partnership
19 agreement. But if the publisher doesn't have one, we
20 actually facilitate that. We can -- the publisher right
21 from within this UI can start this process, and we redirect
22 them to Index Exchange's website, so that in this case they
23 can create a relationship with Index Exchange if they didn't
24 have one already.

25 Q You used the word facilitate.

1 Does Google Ads Manager actually help publishers
2 enter contracts with Google's ad exchange competitors?

3 A Yes, that's right.

4 Q Why would Google do that?

5 A Because we thought that that actually was better
6 addressing publishers' needs. Publishers want to work with
7 these exchanges. And we thought we would design this
8 product in a way that made it as easy as possible for them
9 to do so effectively.

10 Q Okay. Now moving on to a slightly different topic, you
11 testified earlier that Google Ad Manager combined DFP's ad
12 server functionality with AdX's functionality.

13 Do you recall that?

14 A Yes.

15 Q Can a publisher still choose to use just Google Ad
16 Manager's ad server functionality without using AdX?

17 A Yes. Certainly.

18 Q How would it do that?

19 A As I said, the vast majority of publishers don't use
20 AdX, right. By default when you sign up for Google Ad
21 Manager, you don't have access to AdX. So publishers have
22 to go through a vetting process to have access to AdX in the
23 first place.

24 Q So just to be clear, the default is no AdX access?

25 A That's right. The default is no ability to work with

1 AdX.

2 Q So assuming a publisher does apply for and is vetted
3 and gets access to AdX, are there any affirmative steps the
4 publisher must take to make AdX eligible for inventory or
5 does it just happen automatically?

6 A It certainly doesn't happen automatically. By default,
7 AdX has no access to the publisher's inventory, and the
8 publisher has to affirmatively take some step to provide
9 that access like creating an AdX line item.

10 Q If you go to the next slide, is this -- what does this
11 illustrate?

12 A This illustrates exactly how you would create an AdX
13 line item. It's somewhat similar to the header bidding line
14 item creation process. It's the new line item page, you
15 enter a name for the line item, you choose a line item type
16 and a priority. In this case because it's AdX, you would
17 choose the ad exchange type.

18 And then you could scroll down because even if
19 you're giving access to AdX, you may not want to give it
20 access to all of your inventory, and so the next slide shows
21 what happens when you scroll down.

22 You can choose which parts of your inventory,
23 right, you want AdX to have access to. And then you click
24 Save and you have that access.

25 Q So can publishers choose to enable AdX for only a

1 portion of their inventory?

2 A Yes, that's right.

3 MR. VERNON: Objection. Asked and answered.

4 THE COURT: Overruled.

5 MR. MAHR: Go ahead.

6 THE WITNESS: Yes, that's right.

7 BY MR. MAHR:

8 Q And if a publisher doesn't consciously and
9 intentionally take action to enable access to AdX, will
10 Google Ads Manager call AdX at all?

11 A No.

12 Q Okay. So let's consider another scenario.

13 Even if a publisher has set up AdX, is there still
14 a way for the publisher to turn off AdX for portions of its
15 inventory so it's not called to submit bids?

16 A Yes. And you do this using the inventory exclusion
17 protection that I briefly mentioned earlier, and this slide
18 actually illustrates what that looks like.

19 So you could create a new protection, give it a
20 name, say block AdX demand, and here you can choose which
21 inventory you want to exclude AdX from having access to.

22 So in this example, you could say I don't want
23 access -- I don't want AdX to have access to any of my
24 inventory from California.

25 Q So using the inventory exclusion protection, can a

1 publisher allow non Google demand to compete for its
2 inventory via Open Bidding without allowing AdX to compete
3 at all?

4 A Yes, they can.

5 Q And same question with header bidding, using the
6 inventory exclusion protection, can a publisher allow non
7 Google demand to compete for its inventory via header
8 bidding without allowing AdX to compete for that inventory?

9 A Yes, they can. But you wouldn't even need the
10 inventory exclusion protection for that. You could just set
11 up header bidding and not create any AdX access.

12 Q Okay. Thank you.

13 So we've gone through various ways that a
14 publisher can use all of the ad server functionality of
15 Google Ad Manager without using AdX.

16 Is there a way for a publisher to do the converse,
17 to use AdX without having to use the DFP ad server
18 functionality?

19 A Yes, there is.

20 Q How would they do that?

21 A There's a couple ways but the most common is what we
22 refer to as AdX direct. And -- sorry.

23 Q Can you explain how AdX-direct tags work?

24 A Yes. I think the -- yeah, this slide actually
25 illustrates that.

1 This is a small snippet of code, some JavaScript
2 code that the publisher would have to copy and just paste
3 this on their website, and that would allow calls from that
4 publisher to go to AdX direct and be credited to the right
5 publisher's account.

6 Q Is there an automated way for the publisher to do that?

7 A Yes. They would just copy this code, and then they can
8 in an automated way deploy it on all of their web pages.

9 Q What does that AdX-direct tag allow the publisher to
10 do?

11 A It allows them to send ad requests through AdX which
12 AdX will fill if its price is above the floor price that's
13 set, and they have access to all the AdX demand.

14 Q Will AdX return a real-time bid to the third-party ad
15 server?

16 A It will not but it also doesn't return real-time bids
17 to Google Ad Manager or DFP.

18 THE COURT: I'm sorry, what was the answer?

19 THE WITNESS: I said, Your Honor, it will not but
20 it also does not return real-time bids to DFP.

21 BY MR. MAHR:

22 Q Does Google have a policy related to this idea of
23 passing bids to ad servers once AdX has been called?

24 A Yes, we do.

25 Q If you could turn to Tab 4 in your binder, you'll see a

1 document marked DTX 1771.

2 THE COURT: Any objection?

3 MR. VERNON: No objection.

4 THE COURT: All right. It's in.

5 (Defense Exhibit Number 1771 admitted into evidence.)

6 BY MR. MAHR:

7 Q Are you familiar with this document, sir?

8 A Yes.

9 Q And can you tell us what it is just generally?

10 A This generally contains some policies for our Google Ad
11 Manager publishers.

12 Q And turning to page 5 under 2.3, the second paragraph
13 entitled Restrictions On Passing And Redirecting Inventory.

14 Can you please tell us your understanding of that
15 paragraph?

16 A Yeah. This is essentially saying once you've called
17 AdX, you can't take that impression and then pass it through
18 any other system that tries to put the AdX bid in
19 competition with other bids based on price.

20 Q And you said that's also true with DFP?

21 A Yes. That's correct. Though now we don't have the
22 separate products anymore, but substantially, yes.

23 Q Why was AdX built this way?

24 A Essentially, you know, AdX was built even prior to
25 Google's acquisition of it, at a time when exchanges weren't

1 submitting real-time bids, right.

2 And so the understanding was that if you called an
3 exchange and you had a floor price and the exchange beat
4 that price, the exchange would win and that ad would serve.
5 And that's sort of like built into many core pieces of AdX's
6 functionality.

7 Q And when you talked about that period before competing
8 exchanges could submit real-time bids, can you give us a
9 sense of that time period?

10 A Oh, this is, as I said, when AdX was being created. So
11 around 2007, 2008, like that kind of time.

12 Q Why didn't Google subsequently change the way AdX
13 worked to allow it to submit real-time bids into other ad
14 servers?

15 A Well, as I said, we don't even do that for DFP. And
16 the reason is because it's a substantial amount of work.
17 This is sort of really built into AdX's like core code in
18 many places, and it would take a team of engineers years to
19 actually undo that or make that no longer true.

20 And you know, given an expensive change like that,
21 we would rather deploy those engineering resources, those
22 machine resources, to other projects that could increase
23 publisher monetization or improve the product in other ways.

24 And I guess finally, we didn't need to because
25 that goal of allowing multiple exchanges to be in

1 competition based on real-time prices could be achieved
2 anyway, so you could get that outcome even without having to
3 spend all of the time and effort to make this radical change
4 to AdX.

5 Q Did Google ever consider deprecating AdX-direct tags?

6 A I believe we did briefly, yes.

7 Q Did Google in fact deprecate AdX-direct tags?

8 A No, we didn't.

9 Q And why not?

10 A I mean, we found that at the time there were still many
11 publishers using AdX direct and they were deriving value
12 from the product, so we decided not to.

13 Q As we move into some of the specific product features
14 the government has put at issue in this case, I would like
15 to first -- could you please explain for the Court the role
16 that innovation plays in Google's display ads business?

17 A Innovation is really at the heart of this whole
18 business. It's a rapidly changing business. It's evolved
19 very considerably over the last decade. We are constantly
20 trying to find ways to make the product better.

21 As I said, one of the teams that I led, the ads
22 quality team, essentially the whole job of that team is to
23 keep looking for ways to make the product better wherever
24 they can. So they look at all of the data, they look at the
25 auctions, they see is there anything that we can do to make

1 this product work better to help publishers make more money.

2 Q Can you tell us about the kinds of innovations that you
3 worked on for display advertising?

4 A Yes. I worked on several. I mentioned a few of them
5 before like Enhanced Dynamic Allocation, Dynamic Revenue
6 Sharing, reserve price optimization.

7 But I also worked on things like smart throttling,
8 for example, which there are many buyers who are unable to
9 handle all of the bid requests that we send them. And so
10 rather than give them random bid requests, we built machine
11 learning systems that intelligently give them the requests
12 they were most likely to bid on.

13 That meant we got more bids back from them, more
14 high bids from them, and that led to more revenue for
15 publishers.

16 Q Any other innovations?

17 A There were a lot of them.

18 One whole series was around not monetizing ads
19 that were unviewed. So for example, there were many ads
20 that might be in a background tab or load on a page and the
21 user wouldn't see them, and so we had a bunch of innovations
22 here to make sure that advertisers weren't charged for those
23 ads.

24 Q Now, if an advertiser isn't charged for those ads, that
25 would reduce Google's revenue; is that right?

1 A Yes, it would. But in the short term it would.

2 But ultimately we believed that if advertisers are
3 paying for ads that aren't seen, this is just going to be
4 bad for their ROI, and over time they're going to want to
5 stop spending money on wasted impressions that nobody ever
6 sees. And so ultimately, that would lead to pulling money
7 away from the display ecosystem.

8 And so in the long term, we believed that not
9 charging the advertisers for these ads is the right thing to
10 do, and that it would ultimately lead to more money coming
11 into this ecosystem.

12 Q How does Google's display ad business decide which
13 innovations it's going to invest in?

14 A That's a complicated question and there isn't a very
15 easy answer, but roughly we get feedback from our
16 publishers, right. They tell us, well, this part of the
17 product I think could be simpler, could be better, could be
18 improved in some way.

19 And we also have teams of engineers like the
20 quality team that spend all of their time looking at data
21 trying to see is there something that we think we can do
22 better.

23 And then once we have these I guess candidate
24 projects, we'd look at how much benefit we expect the
25 publishers would get from them, and then we would look at

1 the effort that would be involved in the project including
2 the engineering costs, the costs of the servers and the data
3 centers that would be needed. And then ultimately make a
4 priority decision based on a number of those factors.

5 Q I know it's challenging but is there any way you can
6 help quantify the volume of innovations in Google's display
7 ads business?

8 A How can I quantify this. So there's a couple ways I
9 guess.

10 One is we run a lot of experiments, right. So
11 when I was in display ads, on my team of over 100 engineers,
12 most of them were running experiments at any given time.
13 There would be several hundreds of experiments that were
14 running, right, all of which -- or most of which we're
15 really trying to see what can we do better here, how can we
16 improve this.

17 We had a launch committee that would meet pretty
18 much every week and go through five or ten launches that
19 were designed to improve the product in certain ways.

20 So every week we would, you know, launch five or
21 ten of these.

22 Q Can you give us some sense of the general types of
23 experiments that Google's display ads business runs -- ran?

24 A Yeah. I guess there's maybe three types. One, and I'd
25 say the most common, is to evaluate a potential change. So

1 let's say we want to improve the product in a certain way,
2 we would run an experiment and validate that that change
3 actually worked in the way that we thought it would, that
4 publishers would make more money, for example.

5 So that's sort of the first class of experiments.

6 The second class is maybe to investigate
7 something, right, to like determine if something is
8 occurring and maybe a good example of this is related to
9 ads.txt. And here, Google ran a couple of experiments that
10 identified certain large scale fraud that was occurring in
11 this ecosystem. And then based on these experiments, the
12 ads.txt standard was developed to combat that fraud. So
13 this is here an experiment to show that the fraud exists, if
14 you will.

15 And then I guess the third category is after we've
16 launched something, maybe we'll keep an experiment running
17 for a long time to make sure that it continues to work the
18 way that we intended because, as I said, this is an industry
19 that changes a lot and something that works a certain way
20 today might not work in the same way a year from now.

21 Q Can you provide us with an example of some of these
22 experiments?

23 A Yes. So ads.txt was an example of that middle
24 category. Maybe Enhanced Dynamic Allocation illustrates the
25 first and the third.

1 So I was working on Enhanced Dynamic Allocation
2 myself, and as we were developing it, we would run a lot of
3 experiments. I personally was looking at those experiment
4 results every day, multiple times a day.

5 As we got more confidence in the product, the
6 feature was working really well, we ran more experiments
7 but, you know, I might look at it once a week or so.

8 But then even after we launched it, we kept a
9 holdback experiment running for about six years where we
10 were ensuring that the product was continuing to make money
11 for the publishers in the way that we thought it would.

12 Q Thank you.

13 So now I'd like to turn to some of the Google
14 product features the government has put at issue. And we'll
15 start with Dynamic Allocation.

16 Would you please describe the work you personally
17 have done on Dynamic Allocation since joining Google in
18 2010?

19 A Yeah. When I joined Google, my first project was
20 actually related to ad selection of which Dynamic Allocation
21 is a part. And so I worked on ad selection and Dynamic
22 Allocation, and I continued to work on that -- in that space
23 including developing Enhanced Dynamic Allocation.

24 Q At the risk of sounding ignorant, does your work on
25 Dynamic Allocation involve actually digging into the code

1 that runs it?

2 A Yes. At the time it did.

3 Q Is digging in the right word to use in the code?

4 A It's exactly the phrase I would have used, yes.

5 Q As someone who has actually worked with Google's
6 Dynamic Allocation, can you explain to the Court what it is?

7 A Dynamic Allocation is essentially just the calling of
8 AdX to get a real-time price that can be used to compare
9 with the prices of other ad exchanges and ad networks that
10 the publisher is working with.

11 Q So back in the period before the introduction of header
12 bidding, so 2010 to 2014, did Dynamic Allocation improve
13 publishers' ability to monetize otherwise unsold inventory?

14 A It did, yes.

15 MR. VERNON: Objection. Leading.

16 THE COURT: Sustained.

17 BY MR. MAHR:

18 Q Did Dynamic Allocation improve publishers' ability to
19 monetize otherwise unsold inventory?

20 MR. VERNON: Objection. Same question.

21 THE COURT: It's the same question.

22 BY MR. MAHR:

23 Q How did Dynamic Allocation affect publishers' ability
24 to monetize otherwise unsold inventory?

25 A It allowed them to get real-time prices from AdX which

1 meant that they could better compare that price with others,
2 and that made it more likely that they would increase their
3 revenue.

4 Q So I wanted to start with the waterfall, and if we
5 could put up on the screen the government's depiction of the
6 waterfall from their proposed findings of fact.

7 Is this an accurate depiction of the waterfall?

8 MR. VERNON: Objection. Again, undisclosed expert
9 witness.

10 THE COURT: Overruled.

11 BY MR. MAHR:

12 Q Mr. Korula, is this an accurate depiction of the
13 waterfall based on your experience at Google's display ads
14 business?

15 A No. I think it's misleading in a couple of ways.

16 Q What are those ways?

17 A One, it seems to suggest that the publisher is getting
18 these bids of \$1 and 99 cents, you actually see the word bid
19 here, but that's not how it actually worked.

20 Typically exchanges weren't giving or ad networks
21 weren't giving publishers these prices. A call would be
22 made to the exchange or ad network, and they would just say
23 yes or no, right, they weren't actually providing a price to
24 the publisher.

25 And then secondly, once Magnite wins this

1 impression, perhaps because it has a price of \$1.05, then no
2 call is made to OpenX at all, right. And so this price of
3 \$1.10, it doesn't really exist. Nobody knows what this
4 price is because no call was made to OpenX, OpenX didn't
5 call its buyers, there were no bids received. So that's
6 just a hypothetical not actually representing a real price
7 from anyone.

8 Q So why, if at all, do these errors matter?

9 A The first one matters because that sort of is critical
10 to the whole reason you have a waterfall, right.

11 If you actually were getting real-time prices,
12 then you wouldn't need the sequential process. You would
13 just collect the numbers, \$1, 99 cents, \$1.05, and then you
14 would just run an auction among those prices. So exchanges
15 weren't providing this. That's why you needed the
16 waterfall.

17 Q So based on your experience working with Dynamic
18 Allocation and the waterfall, have you prepared a slide that
19 shows how the waterfall actually worked?

20 A Yes. And I tried to do so keeping the numbers
21 identical to the previous slide but correcting those
22 inaccuracies.

23 So we see we have the same PubMatic, Verizon
24 Media, et cetera, with the same historical averages, and a
25 floor price of \$1.01.

1 Now when the call comes to PubMatic, PubMatic
2 internally, it doesn't disclose this, perhaps has a bid of
3 \$1. And because that's below the floor price, PubMatic will
4 respond no, and that's all that happens. You get a yes or a
5 no.

6 And then because you have no, you go to the next
7 one in the sequence. That's Verizon Media. Again,
8 internally they have 99 cents, so they respond no. The
9 publisher gets a no.

10 You go to the next one in the sequence, Magnite,
11 you get a yes. And so then Magnite wins that impression.
12 And the publisher doesn't even know the price at which
13 Magnite has won this impression at this point.

14 And then finally, no call to OpenX happens at all,
15 and so we just have the question marks reflecting there's no
16 bid here because they didn't even have an opportunity to
17 bid.

18 Q So even in your corrected version, can an exchange that
19 the publisher ranks higher in the waterfall still win an
20 impression without exchanges later in the waterfall ever
21 being called?

22 A Yes, that's exactly right.

23 Q Did Google invent the waterfall?

24 A No, we didn't.

25 Q When you began at Google, did you consider the

1 waterfall to be an efficient way to allocate publisher
2 inventory?

3 A It was not efficient, but I guess it was the best there
4 was at the time. That's the best that Google Ad Manager
5 could do or at the time DFP could do.

6 Q Maybe that answers this question but given this
7 inefficiency, why was Google using the waterfall at all?

8 A Yes, because exactly as I said, since exchanges weren't
9 providing real-time bids, all that you could do was work
10 with these historical average prices and these yes/nos, so
11 you could only call them in sequence.

12 Q Did Google develop a response to the inefficiency of
13 the waterfall?

14 A We developed -- I say we but actually prior to Google's
15 acquisition, DoubleClick developed Dynamic Allocation as a
16 way to deal with part of this inefficiency.

17 Q How did Dynamic Allocation deal with part of the
18 inefficiency of the waterfall?

19 A By getting a real-time bid from AdX, that could be used
20 to compare prices, right. So that would partially address
21 this inefficiency because at least you would have the
22 real-time bid from AdX. It wouldn't solve the inefficiency
23 because we didn't have the other real-time bids.

24 Q So did Dynamic Allocation cure the inefficiencies
25 inherent in the waterfall?

1 A No, it didn't. It could only address Google's part of
2 that.

3 Q Have you heard the term, first look, in relation to
4 Dynamic Allocation?

5 A I have heard this term. I think it's a little
6 confusing or misleading. Also because we had another
7 product called DoubleClick first look.

8 THE COURT: I'm sorry, called what?

9 THE WITNESS: DoubleClick first look, Your Honor.

10 BY MR. MAHR:

11 Q What is DoubleClick first look?

12 A DoubleClick first look was a feature that allowed
13 publishers to give certain AdX buyers the opportunity to
14 compete with some guaranteed line items even when they
15 otherwise wouldn't have that opportunity.

16 Q Just to be clear, does this feature, DoubleClick first
17 look, did it have anything to do with how first look has
18 been used in relation to Dynamic Allocation?

19 A No. These are two distinct things.

20 Q So let's set DoubleClick first look aside.

21 Is it accurate that Dynamic Allocation placed AdX
22 at the beginning of every waterfall every time?

23 A No, that's certainly not true.

24 Q Have you prepared a demonstrative to help explain why
25 that's incorrect?

1 A I have, yes.

2 MR. MAHR: If we could go to the next slide.

3 Thank you.

4 THE COURT: Just for the record though before we
5 get to that, this -- we are dealing now with the third
6 demonstrative, right, for this witness? We should be
7 numbering them for the record.

8 MR. MAHR: We have put it in the binder all as 1.

9 THE COURT: All as 1?

10 MR. MAHR: Yes.

11 THE COURT: Okay. All right.

12 MR. MAHR: As Korula Demonstrative 1.

13 BY MR. MAHR:

14 Q Can you proceed?

15 A Yes, certainly.

16 So what would happen here is there would be a
17 price floor of \$1.01, and then a call to AdX would be made
18 to get a real-time bid. But then AdX doesn't necessarily go
19 first.

20 Once we have that real-time bid, we take that
21 price and we compare it with all the other prices that are
22 the historical averages of the other ad exchanges and
23 networks. And then AdX just gets put in the right place
24 based on its price and the competing prices.

25 So for example, if we called AdX and we got a bid

1 of \$1.07, we would compare that to the historical averages
2 of \$1.10, \$1.04 and so forth, and put AdX in the second
3 place because it's below \$1.10 and above \$1.04.

4 Q So which demand source would win the impression in your
5 example?

6 A In this example, PubMatic would win the impression
7 because PubMatic would go first ahead of AdX. They would
8 have the internal bid of \$1.03 which they don't share, but
9 they would be called and their price would be above the
10 floor, and so they would respond yes. And so they would win
11 the impression, not AdX.

12 Q Why would PubMatic win with a lower bid than the
13 advertiser coming through AdX?

14 A They would win because we're comparing only their
15 historical average to AdX's real-time bid. And their
16 historical average is higher. So even though their specific
17 price for that impression is lower, they go first and they
18 win. And so here, AdX's advertisers are just a victim of
19 the inefficiency of the waterfall.

20 Q I'm sorry, I didn't understand.

21 A I said here AdX's buyers are a victim of the
22 inefficiency of the waterfall in that they had the highest
23 bid but they would lose the impression.

24 Q Okay. Well, if we could move to your next slide.

25 Don't advertisers bidding through AdX often bid

1 more than the historical averages of the other participants
2 in the waterfall?

3 A Sometimes they did, and, if so, for example, if they
4 had a bid of \$1.12, then AdX would come first because we
5 would compare \$1.12 to \$1.10. And then in those cases AdX
6 would come first.

7 But AdX could take any position. As we saw in the
8 previous slide, it could be second. And I think the next
9 slide shows that AdX could come fourth. If we had a bid of
10 \$1, then we would put it fourth in the waterfall because
11 that's below \$1.01 and above 99 cents.

12 Q Well, even though bidders coming through AdX didn't
13 necessarily have to go first, did they almost always go
14 first?

15 A No, they certainly didn't.

16 Q Why not?

17 A Because it just depended on their bids, right. And
18 their bids would sometimes be high and sometimes be low.
19 Sometimes their bids would be higher than other people's
20 averages and sometimes lower.

21 I would say, you know, they probably went first
22 only a minority of the time.

23 Q So with all the inefficiencies of the waterfall, the
24 big question is why didn't Google compare AdX's real-time
25 bids with real-time bids from other exchanges during this

1 2010 to 2014 pre header bidding period?

2 A Because we didn't have real-time bids from other
3 exchanges, right. If we had them, that could have been
4 avoided. DFP already had the functionality that was later
5 used by header bidding. So if the exchanges were providing
6 those real-time bids sooner and header bidding had come
7 along sooner, then that could have just been integrated into
8 DFP and we would have been comparing real-time bids.
9 Fundamentally the reason we didn't was because we didn't
10 have access to real-time bids from other exchanges.

11 Q Did Google take any action at all to prevent competing
12 exchanges from submitting real-time bids to DFP?

13 A No, we didn't.

14 Q And would Google have been able to accept those bids
15 had competing exchanges submitted them?

16 A Yes. In that the exact mechanism that was used by
17 header bidding could have been done a year earlier or two
18 years earlier or even before that, right.

19 That mechanism always existed, and so it could
20 have been used by the exchanges as soon as they were
21 providing those bids.

22 Q Did Dynamic Allocation benefit publishers?

23 A Yes, it did. It increased their revenue.

24 Q Did it improve on the inefficiency of the waterfall?

25 A It did, partially as I said before.

1 Q Now, I think this is a question from the Court earlier
2 in the case.

3 Wouldn't Google have been able to improve on the
4 efficiency of the waterfall even further if it had let other
5 exchanges submit real-time bids into the waterfall?

6 A As I was saying, we didn't prohibit other exchanges
7 from submitting real-time bids into DFP. And in fact, the
8 mechanism existed long before header bidding was developed
9 and those exchanges were submitting real-time bids.

10 So if they had developed that technology sooner,
11 then DFP would have been able to integrate it sooner, right.
12 That mechanism long predated the actual development of
13 header bidding. So DFP was always open to this.

14 Q When header bidding enabled third party competing
15 exchanges to submit real-time bids, did Google have to make
16 any changes to DFP to accommodate that?

17 A No.

18 Q Did Dynamic Allocation benefit advertisers?

19 A Yes, it did.

20 Q How so?

21 A It made it more likely that an advertiser who valued an
22 impression highly would win that impression.

23 Q Now, despite the benefits you've testified to of
24 Dynamic Allocation, could a publisher chose not to use
25 Dynamic Allocation?

1 A I mean, certainly they could choose not to use AdX at
2 all. As I said, most publishers don't get access to AdX.
3 And so, yeah, they could certainly work with these other
4 exchanges and not work with AdX through Dynamic Allocation.

5 Q So I want to go through some permutations again.

6 If a DFP publisher still wanted to use AdX but
7 just didn't want to enable Dynamic Allocation, was that
8 possible?

9 A Yes, it was possible. It wasn't like a button or
10 something you could turn off to say turn off Dynamic
11 Allocation, but a publisher could achieve that outcome by
12 just creating a static line item reflecting AdX and then
13 have that compete in the waterfall.

14 Q So again, staying in this same pre header bidding time
15 period, I want to ask about a different kind of possible
16 interconnection, different from submitting real-time bids
17 into DFP.

18 Did any competing exchanges ask Google to set up a
19 way for them to bid directly into the AdX auction?

20 A Yes. I believe a couple of them did.

21 Q And what was Google's response?

22 A We declined those requests.

23 Q Why did Google decline those requests?

24 A There were two primary reasons. One was around safety
25 and security and protections. And the other was around

1 latency.

2 Q Can you explain why latency was a reason for Google to
3 decline those requests?

4 A Sure. So when a request comes to AdX, AdX calls its
5 bidders, those bidders return bids, and then AdX runs an
6 auction and we have a winner or no winner.

7 If other exchanges were bidding into AdX, then AdX
8 would call those other exchanges, those other exchanges
9 would call their bidders, those bidders would return bids to
10 the other exchanges. Those other exchanges would need to
11 run their auctions, and then those exchanges would need to
12 return their winners back to AdX, and the final step would
13 be AdX to run another auction, right.

14 All of those extra steps would increase latency.

15 Q Can you explain how safety and security informed
16 Google's decision to decline those requests?

17 A Yes. So as I said before, we take very seriously the
18 responsibility of ensuring high quality ads on AdX. And
19 we're not perfect, but we try hard to make sure that neither
20 advertisers nor publishers are surprised by what they see.

21 And when we have bidders working directly with
22 AdX, we can examine their ads to make sure there's no
23 viruses, there's no malware, there's nobody trying to mine
24 cryptocurrency on your computer. You know, the ads are
25 brand appropriate based on the publisher's controls that

1 they've set up.

2 If we were to work with exchanges who are
3 themselves working with buyers working with advertisers, and
4 in some cases might be reselling to other exchanges who are
5 then still selling to other buyers, we're far removed from
6 the actual end advertiser.

7 And that makes it much harder for us to ensure
8 that the actual ad coming through is correctly vetted, it's
9 free from viruses and malware, it meets the publisher's
10 brand protections and so forthright. But working closely
11 with the end customer, we can make it more likely that we
12 meet those goals.

13 Q I don't recall if you mentioned this, but is there a
14 term for this idea of an exchange working with another
15 exchange working with another exchange, an industry term?

16 A People sometimes call it chaining, reselling.

17 Q Did there eventually come a time when other exchanges
18 started submitting real-time bids to compete in DFP with
19 AdX?

20 A Yes. With the development of header bidding.

21 Q And what was Google's response to header bidding?

22 A We developed Open Bidding, as I said, to address this
23 publisher need in what we thought was a better way.

24 Q Did Google's display ad business have any concerns
25 initially about introducing an Open Bidding product?

1 A Early reports were a little bit concerned at the
2 beginning because we were taking our publisher customer base
3 that we had built and grown and giving our competitors
4 direct access to it, and in many cases, facilitating those
5 connections where they didn't exist.

6 And so there were some early concerns about that,
7 but as we started to develop the product and test it out, we
8 saw that it was something that was really adding a lot of
9 value to the publishers and exchanges, and so we decided to
10 really go all in and make it what we thought and think is
11 the best in class product.

12 Q Finally before we leave this stage of the industry's
13 development, after header bidding took hold, did Google
14 still have the first look at publisher inventory coming
15 through header bidding?

16 A No. We didn't have a first look at all. In fact,
17 publishers would call their header bidding partners even
18 prior to Ad Manager getting any call or Ad Manager knowing
19 that an ad request existed.

20 Q So now I'd like to turn to the government's last look
21 allegations.

22 Are you familiar with the term, last look?

23 A Yes.

24 Q And what is your understanding of what that term refers
25 to?

1 A Last look is a term that some people have used to
2 characterize the information that's sent to buyers on AdX
3 and Open Bidding about the reserve price in the auction, the
4 minimum price they need to bid in order to have an
5 opportunity to win.

6 And in particular, the fact that that minimum
7 price can sometimes include a price from competing line
8 items.

9 Q Why did Google provide that information?

10 A AdX has consistently tried to have the principal that
11 we should provide buyers with as much accurate information
12 as possible to help them bid effectively, right.

13 In this case, to provide buyers with the
14 information about the minimum price that they need to bid in
15 order to have a chance of winning, right, because we believe
16 that helps buyers bid more effectively.

17 Q And we're now in this period post header bidding, post
18 Open Bidding.

19 Did Google limit this information only to buyers
20 bidding through AdX?

21 A No. We sent the same so-called last look information
22 to the exchanges participating in Open Bidding as well.
23 It's the same principal, for all of the buyers who were
24 integrated with us, we were providing as much information as
25 possible to make it easy for them to bid effectively.

1 Q Could Google have chosen just to send the publisher set
2 floor price?

3 A We could. But doing so would have resulted in reduced
4 revenue for publishers.

5 Q Did Google design a last-look advantage to harm rival
6 exchanges?

7 A No. And in fact, I don't think it's accurate to say
8 that we designed this last-look advantage at all.

9 It was just the consequence of this principle of
10 consistently telling buyers the minimum amount they needed
11 to bid in order to win.

12 Q Did this so-called last look give AdX an advantage over
13 competitors by allowing AdX bidders to bid just 1 penny more
14 than -- and win the auction?

15 A No. I think there's a couple things about this that
16 are, you know, worth clarifying.

17 First of all, AdX is not bidding. Right. It's
18 AdX's buyers who are bidding. So AdX is not bidding 1 penny
19 more.

20 But secondly, these buyers are not just competing
21 with that floor price, they're competing with each other,
22 and we have hundreds of Authorized Buyers.

23 And so if you had a floor price of \$4, a buyer
24 wouldn't necessarily try to bid only \$4 and 1 penny because
25 they don't just want to beat the floor, they want to beat

1 all the competitors. So there's no point in bidding \$4.01
2 if somebody else is going to bid \$4.50, right.

3 So those buyers would bid so that they could
4 maximize their chance of winning the auction.

5 Q Does --

6 THE COURT: I'm sorry. So let me make sure I'm
7 100 percent clear on what you've said.

8 So you've said in this system, the various
9 third-party auctions occur; right?

10 THE WITNESS: Yes, Your Honor.

11 THE COURT: There's a highest bid among those
12 others.

13 THE WITNESS: Yes.

14 THE COURT: That highest bid is sent to AdX which
15 then allows the buyers in the Google system to see those
16 buyers out there have said they've bid \$3.05, right. And if
17 a buyer in the AdX system or the Google system wants to bid
18 on that impression, they come up with \$3.06, they're going
19 to win the bid.

20 Is that what's happening?

21 THE WITNESS: Largely, Your Honor. Two things.

22 If they bid \$3.06 and they had no other
23 competition from the other Authorized Buyers, then yes, they
24 would win the impression.

25 Also, it's not only the AdX buyers but the Open

1 Bidding buyers as well. So all the other exchanges in Open
2 Bidding had the same information.

3 THE COURT: No, but what I'm saying, the last look
4 concept is that the people in what I'm going to call within
5 the Google buying system, they're getting an opportunity to
6 see what all the other bidders put in.

7 THE WITNESS: Yes, Your Honor.

8 THE COURT: So they get the last look.

9 THE WITNESS: Yes, if by the Google buying system
10 you mean Open Bidding as well as AdX. Yes.

11 THE COURT: Yes.

12 BY MR. MAHR:

13 Q So what demand sources are included in that Google
14 system?

15 A Here this is including Google's buyers, Google Ads and
16 DV360. It includes all the Authorized Buyers like The Trade
17 Desk, Criteo, AppNexus and so on. It also includes the Open
18 Bidding exchanges like Index Exchange, PubMatic, Magnite and
19 others.

20 Q And does Google Ad Manager allow Amazon header-bidding
21 solutions to be accessed?

22 A Amazon can be a header bidding partner, and yes,
23 publishers can work with Amazon through header bidding.

24 Q And the same with Prebid?

25 A Yes, absolutely.

1 Q Does this so-called last look still exist today?

2 A It does not. We removed it in 2019 as part of our move
3 to the Unified First Price Auction.

4 MR. MAHR: Your Honor, I'm going to move to
5 Enhanced Dynamic Allocation unless you had any further
6 questions.

7 THE COURT: No.

8 MR. MAHR: One second, Your Honor, please.

9 BY MR. MAHR:

10 Q Before we go to Enhanced Dynamic Allocation, I want to
11 be sure that this point comes across.

12 And this 1 penny more, would there be any risk to
13 an AdX bidder bidding just 1 penny more than the bid it
14 receives from DFP?

15 A Yes, certainly. The risk in doing so is that they
16 could be outbid by a competing AdX buyer or by an Open
17 Bidding exchange.

18 And so typically buyers wouldn't bid just 1 penny
19 more which is why, as I said, if we had removed the last
20 look, publishers would have lost revenue.

21 Q And how much demand, can you just give us a sense of
22 the demand that is represented by what we've been calling
23 the Google AdX demand?

24 A Here, when you say how much demand are you referring to
25 the number of the hundreds of Authorized Buyers that we

1 have? So yeah, there are many hundreds of them. They
2 represent DSPs, trading desks, ad networks, and they spend
3 billions of dollars every year with Google.

4 Q So is it true that this winning by 1 penny more would
5 only happen if none of those other bidders bid, only one
6 bidder?

7 A That's right. The case where you would have only 1
8 penny more would be if you had only one bid above the floor
9 price, right. And if, for example, the floor price was \$4,
10 and one buyer bid \$5 and another buyer bid \$6, then of
11 course the publisher wouldn't get paid 1 penny more, they
12 would get paid \$5. And that's exactly the reason that we
13 saw that publishers would lose money if we removed it.

14 Q And finally, does the publisher control whether to
15 submit the header bidding bid into this auction -- into the
16 AdX auction or the Open Bidding auction?

17 MR. VERNON: Objection. Leading.

18 THE COURT: No, I don't think that's leading.
19 Overruled.

20 THE WITNESS: The publisher now has the ability --
21 well, now there's none of this because we moved to the
22 Unified First Price Auction and this information is not
23 shared with any buyer in the auction, right.

24 Prior to 2019, then no, the minimum price that a
25 buyer needed to bid in order to win was always sent to the

1 buyers. Whether that came from the publisher set floor
2 price, the reserve price optimization feature, a temporary
3 CPM from Enhanced Dynamic Allocation or in some cases a
4 competing line item.

5 Q And again, why did Google not just provide the
6 publisher set floor price into AdX?

7 A Because we saw that if we had done so, publishers would
8 have lost money. Not a penny, but they would have actually
9 lost more when in many cases multiple buyers were submitting
10 bids above the floor, which they wouldn't have if we hadn't
11 sent that information.

12 Q Okay. Turning now to Enhanced Dynamic Allocation.

13 Can you explain to the Court what Enhanced Dynamic
14 Allocation is?

15 A Enhanced Dynamic Allocation is an optimization that we
16 developed that for the first time allowed buyers on AdX,
17 other ad exchanges and networks in DFP, all of these
18 indirect sources of demand to compete with the direct
19 guaranteed line items where they would otherwise have not
20 been able to compete.

21 Q And when was Enhanced Dynamic Allocation introduced?

22 A I believe we launched it in 2014.

23 Q If you could turn to Tab 8 in your binder, I'm showing
24 you DTX 125.

25 THE COURT: Any objection to 125?

1 MR. VERNON: No objection.

2 THE COURT: All right. It's in.

3 (Defense Exhibit Number 125 admitted into evidence.)

4 BY MR. MAHR:

5 Q Looking at page 1 of DTX 125, what was the problem that
6 Enhanced Dynamic Allocation was designed to address?

7 A Essentially without Enhanced Dynamic Allocation, if a
8 guaranteed ad wanted to serve, meaning it was eligible to
9 serve, it was not ahead of schedule, it would serve.
10 Regardless of how much money a publisher could make from a
11 competing ad exchange or network or AdX, those demand
12 sources didn't even have an opportunity to compete.

13 And Enhanced Dynamic Allocation said well by
14 allowing them to compete, publishers can actually benefit
15 from the high bids that they sometimes provide. And so
16 publishers could increase their revenue by allowing this
17 competition.

18 Q Did Enhanced Dynamic Allocation put a publisher's
19 direct sold ads in connection with indirect demand?

20 A Yes, that's exactly right. So it allowed this
21 competition to occur while still ensuring that the direct
22 sold reservations met their goals.

23 Q Did Enhanced Dynamic Allocation benefit publishers?

24 A It did. Yes. It increased their revenue.

25 Q Did it benefit advertisers?

1 A It did. It gave them the opportunity to compete for
2 these impressions where they would previously have never had
3 had that opportunity.

4 Q Did Enhanced Dynamic Allocation benefit users?

5 A It did in that it increased their likelihood of seeing
6 a relevant ad.

7 Q Did Google raise the price of AdX or DFP as a result of
8 building this innovation that gave publishers more revenue?

9 A No, it did not.

10 Q Okay. Turning now to sell-side Dynamic Revenue Share.

11 Can you tell the Court what role you played in the
12 development of sell-side Dynamic Revenue Share?

13 A The engineers who were working on sell-side Dynamic
14 Revenue Share generally reported up to me.

15 Q And what is sell-side Dynamic Revenue Share?

16 A Sell-side Dynamic Revenue Share essentially is a way of
17 increasing transactions, allowing certain transactions to
18 clear, where they wouldn't have otherwise cleared, by Google
19 reducing its revenue share.

20 So I'll say that again. There are many
21 transactions where if Google were to take its full revenue
22 share, that transaction would not clear, and the publisher
23 wouldn't get paid. But by Google reducing its revenue
24 share, that transaction could clear, and the publisher would
25 still get paid.

1 And so Dynamic Revenue Sharing allowed Google to
2 reduce its revenue share and increased these transactions.

3 Q Did you prepare a demonstrative to help explain Dynamic
4 Revenue Share?

5 A I did, yes.

6 Q If we could have the next slide.

7 Would you please walk us through this slide.

8 A Yes. In -- there are three examples shown here. And
9 in all cases, the publisher has set a floor price of \$1.

10 Now, the first bar on the left, there's a bid of
11 \$1.50, and so Google can take its full revenue share,
12 typically 20 percent for Open Auction bids. That would be
13 one-fifth of \$1.50, 30 cents, and still leave enough money
14 for the publisher to get paid more than the floor price that
15 they want. There's \$1.20 and the publisher only wanted at
16 least only \$1.

17 On the other hand, the second bar shows a bid of
18 \$1.20. If Google were to take its full revenue share, that
19 would be one-fifth of this, that's 24 cents. That would
20 leave only 96 cents for the publisher. And 96 cents is
21 below the floor price -- the minimum price that the
22 publisher wanted to be paid, and so this transaction would
23 not clear if we had a fixed revenue share.

24 On the other hand, if Google had the ability to
25 lower its revenue share, as the bar on the right shows, then

1 with that same \$1.20 bid, we could take a 17 percent revenue
2 share, so less than what we're entitled to, and that leaves
3 20 cents for us and \$1 for the publisher. Which still meets
4 their price floor, so the publisher can get paid the minimum
5 they want.

6 And so what DRS does is transactions like this red
7 one that wouldn't have occurred, it allows them to occur.

8 Q How is the issue Dynamic Revenue Share address
9 identified?

10 A Essentially we had some of the engineers from the
11 quality team looking closely at the records of many, many
12 auctions, identifying that this was a phenomenon that
13 occurred, there were these transactions that wouldn't clear,
14 and developing the solution as a way to have publishers be
15 paid for those transactions.

16 Q If you would turn to Tab 9 in your binder, it contains
17 a document marked DTX 212.

18 THE COURT: Any objection to 212?

19 MR. VERNON: No objection.

20 THE COURT: All right. It's in.

21 (Defense Exhibit Number 212 admitted into evidence.)

22 BY MR. MAHR:

23 Q Mr. Korula, can you tell the Court what a PRD is?

24 A A PRD or a product requirements document is generally
25 a short -- in this case a mini PRD is a short description of

1 how a particular product or feature should work.

2 Q And does this PRD describe the intent behind Dynamic
3 Revenue Share?

4 A Yes, that's correct.

5 Q And what was that intent?

6 A Well, as the second paragraph says, the project
7 proposes to change the 20 percent revenue share per query to
8 allow more auctions to have winners and increase the revenue
9 for publishers.

10 Q Was Google's intent with Dynamic Revenue Share to have
11 more transactions close on AdX instead of competing
12 exchanges?

13 MR. VERNON: Objection. Foundation.

14 THE COURT: I'll overrule that.

15 THE WITNESS: Google's intent was to have more
16 transactions occur. Those transactions would be on AdX, but
17 the goal was to have more transactions occur overall.

18 Q And do you know whether the effect of Dynamic Revenue
19 Share, regardless of intent, was the effect to have more
20 transactions close on AdX instead of other exchanges?

21 A There was an effect of more transactions occurring on
22 AdX, but the considerable majority of these were
23 transactions that wouldn't have otherwise closed, not
24 transactions that would have closed on other exchanges.

25 Q And how many people worked on Dynamic Revenue Share

1 under your direction?

2 A At various times about five or six engineers.

3 Q And over what period of time was Dynamic Revenue Share?

4 A Between 2014 and 2018 was when we were working on it,
5 though we launched it in 2015.

6 Q Did this product evolve over time?

7 A It did, yes, we had three versions.

8 Q Can you just very briefly walk us through these
9 versions?

10 A Certainly. Dynamic Revenue Share Version 1 worked as I
11 displayed on that previous slide with the three bars.
12 Google would reduce its revenue share on some queries in
13 order to allow these transactions to occur that wouldn't
14 have otherwise occurred.

15 In Dynamic Revenue Share Version 2, we would lower
16 our revenue share on some queries and we could increase our
17 revenue share on some other queries while still keeping your
18 revenue share below 20 percent on average. And this made
19 the product more sustainable because we had seen that
20 otherwise publishers could raise floors and buyers could
21 lower bids such that DRS would no longer sustainably work.

22 And then finally, we developed truthful DRS which
23 was the third version of DRS. And with truthful DRS, rather
24 than receiving bids and then determining our revenue share
25 for each auction, we would determine the revenue share prior

1 to calling buyers.

2 Q And why that change in truthful DRS?

3 A Because we believed that it made the auction more
4 incentive compatible, and so in that sense it was easier for
5 buyers to bid. It was a little bit more difficult for
6 Google, but we felt it was the right long-term thing to do.

7 Q Just to be clear, did the name truthful DRS for DRS3
8 imply that either of the two versions of DRS were in any way
9 misleading or untruthful?

10 A No. This is not using truthful in the commonly
11 understood sense but in the technical auction sense where
12 perhaps the more accurate phrase would be incentive
13 compatible.

14 Q Were publishers able to opt out of DRS if they chose
15 to?

16 A Yes, they were, Versions 2 and 3, not the initial
17 version of DRS.

18 Q Did Google do any analysis concerning the impact of
19 Dynamic Revenue Share?

20 A Yes, we did.

21 Q And I'd like you to turn to Tab 5 of your binder,
22 DTX 312, which, Your Honor, has already been admitted.

23 Looking at the first page, do you recognize this
24 document?

25 A Yes, I do. I was one of the authors of this document.

1 Q And what is it?

2 A This is an analysis of overall publisher revenue with
3 Dynamic Revenue Sharing, Version 2. And in particular, we
4 were trying to ensure that DRS didn't only increase the
5 publisher's revenue from AdX but it increased the
6 publisher's revenue overall.

7 Q Turning to page 2, can you explain what page 2 shows?

8 A Yes. Page 2 is an executive summary of the overall
9 findings of this analysis. And in the first two bullets we
10 see the impact on publishers. It shows in the second bullet
11 a 4.17 percent increase in publisher revenue essentially
12 from AdX. And in the first bullet, a 2.8 percent increase
13 in publisher revenue overall, meaning including AdX and
14 other sources of demand like header bidding.

15 So as I said, we were trying to ensure that this
16 wasn't just more revenue from AdX at the cost of other
17 exchanges but more revenue for the publisher overall.

18 Q How much did Google charge publishers for Dynamic
19 Revenue Share?

20 A We didn't charge publishers anything. In fact, if
21 anything, we lowered our revenue share.

22 Q And what is the impact on Dynamic Revenue Share today?

23 A It doesn't exist. We removed it as we migrated to the
24 Unified First Price Auction.

25 Q Can you tell us how long Dynamic Revenue Share was in

1 effect?

2 A From 2015 through 2019.

3 Q Why did Google stop using Dynamic Revenue Share?

4 A As we migrated to the Unified First Price Auction, it
5 was a couple things. One, the nature of floor prices is
6 different in a first-price auction.

7 But secondly and more importantly, one of our
8 principles in that migration was that we were going to try
9 to run a consistent auction with consistent rules in which
10 generally speaking all the buyers were competing in the same
11 way.

12 And with Dynamic Revenue Share, we had the ability
13 to modify our revenue share for Authorized Buyers but not
14 for all the other participants in the Unified First Price
15 Auction. And so we just said, no, we're going to eliminate
16 this and just have no Dynamic Revenue Share for all buyers.

17 Q Even though Google stopped using Dynamic Revenue Share,
18 were other exchanges participating in Google's unified
19 auction able to continue to employ their own versions of
20 Dynamic Revenue Share?

21 A Yes. I mean, we don't control how they charge their
22 customers or what revenue shares they take. They can adjust
23 that however they want. Google has no way to affect that.

24 Q Moving to another topic, reserve price optimization.

25 Did you have a role in reserve price optimization?

1 A I did. For some engineers that I was technically
2 leading and then ultimately that entire engineering team
3 reported to me.

4 Q Can you tell the Court what reserve price optimization
5 is?

6 A Excuse me. I beg your pardon.

7 Q Take your time.

8 A Reserve price optimization is a feature that we
9 developed to increase publisher revenue by closing the gap
10 between high bids that publishers would sometimes see and
11 the clearing price that they otherwise would have gotten.

12 THE COURT: I'm sorry, between high bids and what?

13 THE WITNESS: And the clearing price of the
14 auction that was lower.

15 BY MR. MAHR:

16 Q When was this feature first introduced?

17 A I believe it was in 2015.

18 Q And what led Google to create a feature designed to
19 help publishers set more effective reserve prices?

20 A Well, we got feedback from publishers that they were
21 seeing this gap, they were seeing that in many cases they
22 had high bids, but the actual price that they were getting
23 paid was much lower. And so they wanted to improve that.

24 And we also had some senior engineers from our
25 quality team who had looked at a lot of these auctions where

1 these gaps were occurring and who believed that they could
2 identify a better algorithm to set these reserve prices to
3 close that gap.

4 Q Did you prepare a demonstrative to help explain this?

5 A I did, yes.

6 Q Could you take us through this demonstrative please?

7 A Certainly.

8 So in this example, we have four buyers. Their
9 bids are \$10, \$4, \$2 and \$1 respectively.

10 And let's say the publisher has set a floor price
11 of \$3. Now what happens, we have this high bid of \$10 and
12 that buyer wins, but they pay the highest of the second
13 highest bid and the floor price. That's \$4 and \$3
14 respectively.

15 And so there was a buyer who was willing to pay
16 \$10 but the auction closes only at \$4. And so the
17 publishers lost out on all of that, right. They get paid
18 only \$4 even though someone was willing to pay \$10.

19 Q Did reserve price optimization help publishers address
20 this loss?

21 A Yes, it did. As the next slide shows, reserve price
22 optimization would dynamically adjust the floor prices, of
23 course, before buyers bid. And if we set a floor price of
24 \$7, then with the same bids, the highest bidder would win
25 with their \$10 bid and now clear at the highest of \$7 and

1 \$4. And so they would pay \$7 to the publisher instead of
2 the publisher getting \$4.

3 So with the reserve price optimization, the
4 publisher would get \$7 instead of \$4 or almost double the
5 revenue.

6 THE COURT: What I don't understand is, at least
7 my experience of auctions is if you bid \$10 and you win that
8 bid, that's the highest bid, why are you not paying the \$10?

9 THE WITNESS: That's an excellent question, Your
10 Honor.

11 Are these auctions, for example, typically like
12 art auctions where like Sotheby's or Christy's is running an
13 auction. In those types of auctions, it works exactly the
14 way that you described.

15 And the reason is because you have multiple
16 participants in the auction, and they raise their paddles.
17 The auctioneer says to somebody, do you want to pay, \$7,
18 someone says yes. Does somebody want to pay \$8, someone
19 says yes, and so forth.

20 In this case, once the auctioneer says they start
21 at \$2, you have a few bidders, once they reached \$4 buyer B
22 would drop out because their price is \$4. And so buyer A
23 would win at the next increment. Even if buyer A were
24 willing to pay \$10, right, the auction would close for
25 something close to \$4 because as the auctioneer raises the

1 price, only buyer A is still willing to bid.

2 And so even in that type of auction, the price
3 that it closes at is the point at which the second highest
4 bidder drops out. Right. And that's the last bid that you
5 get but it's not how much you are ultimately willing to pay
6 which might have been a lot higher because you perhaps value
7 the impression very highly.

8 BY MR. MAHR:

9 Q Maybe coming at this another way, is the Sotheby's
10 auction you're describing, what kind of auction is it?

11 A It is what we call an ascending auction or sometimes an
12 English auction. It's not this type of auction which is a
13 sealed bid second-price auction.

14 In a sealed bid second-price auction, all of the
15 buyers submit their bids at once, and then you open up the
16 bids, and you see who has the highest bid.

17 In the Sotheby's type auction, buyers get to bid
18 repeatedly. And so the auctioneer says does anybody want to
19 bid \$1, does anybody want to bid \$2, \$3, \$4, and they keep
20 raising their bids until all but one person drops out.

21 So there are different types of auctions, but
22 actually, there's something that they share which is the
23 final price the seller gets paid is the point at which the
24 second highest bidder drops out, right, or the reserve
25 price.

1 So in an auction if an auctioneer for fine art
2 were saying \$1 million, somebody says yes, I'll pay that;
3 they go to the other high bidders and they all say no, I'm
4 not going to bid anymore; then the last buyer standing wins
5 and they pay \$1 million even though they might have been
6 willing to pay up to \$2 million.

7 Q Is this Sotheby's example a first-price auction?

8 A It is not. It is an ascending auction.

9 Q Let's step away from the Sotheby's auction.

10 The reserve price optimization, does it apply in a
11 first-price auction context?

12 A Not in this way because in a first-price auction, the
13 buyer pays what they bid, and in that sense it is analogous
14 to the Sotheby's auction.

15 When a buyer pays what they bid, then it doesn't
16 depend on the floor price or anything else. They just pay
17 what they bid. And so the reserve price optimization
18 doesn't work this way in a first-price auction.

19 Q And the reserve price optimization you described here,
20 is that in a first-price auction?

21 A No, it is not. This is a second-price auction.

22 Q What -- I'm sorry, just for the record, what kind of
23 auction is this?

24 A This is a second-price auction.

25 Q Okay. And in that second-price auction, what is the

1 price the winning bidder pays?

2 A They pay the highest of the second highest bid and the
3 floor price, so the reserve price.

4 Q Okay. So can you explain again in your slide how a --
5 in a second-price auction context reserve price optimization
6 helps the bidder improve --

7 A It helps the publisher improve.

8 Q -- helps the publisher improve its monetization?

9 A Yes. So in the second-price auction context, because
10 the auction closes at the second highest bid or the reserve
11 price, whichever is higher, then with reserve price
12 optimization the publisher gets paid \$7 in this example,
13 right. The dynamic floor price set by RPO is \$7, so the
14 publisher gets paid \$7 instead of \$4.

15 Q Now, at this stage reserve price optimization was
16 introduced, what kind of auction was the industry using in
17 general?

18 A At this time people were mostly running second-price
19 auctions.

20 Q Was anyone in the advertising -- the digital
21 advertising space running an ascending auction?

22 A Nobody in digital advertising runs ascending or
23 descending auctions.

24 Q Okay.

25 A They run sealed bid auctions which means all the bids

1 come at once.

2 The fine art auctions are typically you can bid
3 multiple times.

4 Q I just want to focus on the auctions here in digital
5 advertising at this time when reserve price optimization was
6 in effect.

7 Was it a second-price auction or a first-price
8 auction?

9 A It was a second-price auction.

10 Q Okay. If you're trying to close the gap between the
11 highest bid and the reserve price, why not set the price
12 floor all the way up in your example to \$9.99 and close the
13 gap further?

14 A Because you don't actually know how much the buyer is
15 going to bid. Right. And so if, for example, you set the
16 floor price to be \$10.01 as we see on this slide, then the
17 buyer wouldn't win at all because their bid would be below
18 the reserve price, and so the auction wouldn't clear.

19 And so you run the risk of setting the reserve
20 price too high, of the auction not clearing at all, which
21 means the publisher gets paid zero. So rather than getting
22 paid \$7 or even \$4, they would get nothing at all.

23 And so you don't want the reserve prices to be too
24 high because then you just exclude all the buyers.

25 Q Well, did reserve price optimization then harm

1 advertisers by causing them to have paid more than they
2 otherwise would have paid without reserve price
3 optimization?

4 A It could result in advertisers paying more than -- and
5 it did result in advertisers paying more than they otherwise
6 would have.

7 But for one thing, I'll note that the advertiser
8 was in fact willing to pay \$10, so it was still good for
9 them in that they won this impression. But also, while it
10 might have increased their prices in the short term, it also
11 made more money for publishers. So over time that
12 encourages publishers both to create more content that they
13 can afford to now that they're getting paid for and also
14 make more content available to the auction.

15 So in the long term those are good things for
16 advertisers as well.

17 Q How much did Google charge publishers for reserve price
18 optimization?

19 A We didn't charge publishers anything for it.

20 Q Is reserve price optimization still in effect today?

21 A It is not in this way.

22 Q And when did Google retire reserve price optimization?

23 A As part of our move to the Unified First Price Auction
24 because --

25 Q You can finish your answer.

1 A I was just going to say because as we discussed,
2 reserve pricing works differently in different types of
3 auctions.

4 MR. MAHR: Your Honor, I'm just looking at the
5 break time. I'm about to move to my last set of questions.

6 THE COURT: Go ahead.

7 BY MR. MAHR:

8 Q I'd like to move now to discuss Google's move to a
9 Unified First Price Auction.

10 A Yes.

11 Q And we've talked a bit about first price and
12 second-price auctions now.

13 During your time in display ads, what kind of
14 auction did Google run?

15 A This changed over time. So from 2016 to 2019, AdX was
16 running a second-price auction from when we launched Open
17 Bidding. Open Bidding was a first-price auction. And so we
18 had these two auctions running simultaneously. And then
19 from 2019 onwards, we had the Unified First Price Auction.

20 Q And what role did you play in the move to a Unified
21 First Price Auction?

22 A I led the overall migration to the Unified First Price
23 Auction and all of the sell-side work.

24 Q Why did Google move to a Unified First Price Auction?

25 A Prior to that move, as I said, we were running multiple

1 auctions. Some second price, some first price, we were
2 running auctions of auctions. It was extremely confusing
3 for buyers and for publishers in some cases.

4 It was not necessarily the case that the highest
5 bidder would win an auction because of the complex and
6 interconnected auction mechanics. And so we decided to move
7 to this simple Unified First Price Auction in which all the
8 buyers would compete in essentially the same way under the
9 same rules with the same mechanics.

10 Q And when did Google make this move to the Unified First
11 Price Auction?

12 A In September 2019.

13 Q Had others in the industry moved to a first-price
14 auction during this time period?

15 A Yes. In fact, I believe most others had. And Google
16 was one of the last exchanges or AdX was one of the last
17 exchanges to move to a first-price auction.

18 Q Have you prepared a demonstrative to help explain the
19 move -- Google's move to a Unified First Price Auction?

20 A Yes, I have.

21 MR. MAHR: If we can show the next slide in the
22 demonstratives.

23 BY MR. MAHR:

24 Q Mr. Korula, could you please explain what is shown on
25 this slide?

1 A Yes. This is illustrating the state prior to our move
2 to the Unified First Price Auction. So you have DSPs and ad
3 networks on the left. They're bidding into multiple
4 exchanges, each of which then participates in the unified --
5 I'm sorry, in the first-price auction, the Open Bidding
6 auction.

7 We also have DSPs and networks participating in
8 the AdX auction which is a second-price auction. The bids
9 from that second-price auction along with the bids from the
10 other exchanges now come into a first-price auction.

11 And so you just had all of these different
12 mechanics with different floor prices and just the different
13 rules leading to all kinds of complexity.

14 Q And going to the next slide, could you show the effects
15 of those different rules?

16 A Yeah. So this is an illustration of the point I was
17 making before, that the highest bidder didn't necessarily
18 win. So let's say you have three buyers working with
19 Exchange Bidding and AdX. Let's say DSP1 submits a \$3 bid
20 into Index Exchange. So we have this \$3 bid coming into
21 Google's Open Bidding auction.

22 We also have DSP2 with \$2 and Network One with \$6
23 bidding into the AdX auction.

24 Now, the AdX auction is a second-price auction,
25 and so this AdX auction closes at the second highest bid

1 which is \$2. And so \$2 is what AdX puts into the final Open
2 Bidding auction.

3 Q I'm sorry, just to be clear, even though Network One is
4 willing to bid \$6 in the second-price auction --

5 A That's right.

6 Q -- the winning bid is only \$2?

7 A That's right. Even though Network One is willing to
8 bid \$6, only \$2 goes into the unified auction, and then \$3
9 is the final winning bid.

10 So even though there was someone willing to pay \$6
11 and for that matter even if they were willing to pay \$600 in
12 this example, they would lose because the second highest bid
13 was \$2. And so this very high bidder could lose the
14 auction.

15 This is an example of inefficiency of our old
16 multilayered different mechanics auction system.

17 Q Moving to the next slide, can you please explain to the
18 Court what this slide illustrates?

19 A Yes. So this is the new Unified First Price Auction.
20 And it just says all of the demand sources are competing in
21 this one auction. Exchanges participating in Open Bidding,
22 bids from header bidding, Authorized Buyers into AdX, all of
23 them just submit their bids into one auction that's a
24 first-price auction and the highest bidder wins.

25 Q Did Google's move to a Unified First Price Auction give

1 Google any advantages against third-party demand sources
2 competing on Google's platform?

3 A No, it didn't give Google any advantages in that
4 everybody was competing in the same auction with the same
5 mechanics. So no, there was no advantage for Google or
6 anyone else.

7 Q What about the fact that demand sources participating
8 in the first-price auction have to pay a fee to participate
9 in Open Bidding while Google did not?

10 A Oh, that had nothing to do with the migration to the
11 first-price auction. Open Bidding charged a fee before the
12 migration to the Unified First Price Auction and the same
13 fee after.

14 Q And what was the purpose of that fee?

15 A That fee covered our costs in running the Open Bidding
16 system, sending bid requests to all of the participating
17 exchanges, getting their bids, handling the billing and
18 payments, managing the publisher relationship, eliminating
19 discrepancies, all of that stuff that we did and the
20 exchanges no longer had to do.

21 So it covered those costs and it provided a lot of
22 value to publishers in that it gave them a very simple
23 unified setup that they could do in one place with unified
24 reporting, one payment system, and so forth.

25 Q Who pays the Open Bidding fee?

1 A The publisher pays the Open Bidding fee.

2 Q Now, if a publisher didn't want to participate in Open
3 Bidding, didn't want to pay that fee, could they still
4 participate in the unified auction?

5 A If you mean could they still have other exchanges
6 participating in the Unified First Price Auction,
7 absolutely. They could do that via header bidding for which
8 Google doesn't charge any fee at all.

9 Q They could do that via Prebid?

10 A They could do that via Prebid, certainly.

11 Q Amazon's header bidding solution?

12 A Yes, of course.

13 Q Okay.

14 THE COURT: Let me ask a question.

15 Why is it called Unified First Price Auction? Is
16 it not unified highest bid auction?

17 THE WITNESS: That's right, Your Honor. It is a
18 unified auction and the highest bid does win.

19 THE COURT: All right.

20 THE WITNESS: First price is the name that we use
21 for these auctions where you only get to bid once and the
22 highest bid wins. It's just a technical term for that kind
23 of auction.

24 THE COURT: Okay. Thank you.

25 BY MR. MAHR:

1 Q Moving to some of the changes Google made in connection
2 with its move to a Unified First Price Auction, did Google
3 make any changes in terms of the information that it makes
4 available to buyers in connection with its move to the
5 unified auction?

6 A We provided a new minimum bid-to-win fields to buyers
7 as part of this move.

8 Q And what is minimum bid-to-win data?

9 A We tell all the buyers after an auction is complete, we
10 tell the buyers how much they would have needed to bid in
11 order to win the auction if all the bids from the other
12 buyers hadn't changed.

13 Q Why did Google decide to provide this data to buyers in
14 the unified auction?

15 A Because it makes bidding much more efficient, right.
16 Going back to our previous discussion, we have long had this
17 principle that we should try to provide information to
18 buyers to make bidding better.

19 In a first-price auction, it's important to
20 understand how other buyers are bidding. Of course, we're
21 doing this after the fact, not telling buyers before they
22 bid.

23 And so we provided this information so that buyers
24 could bid more effectively which would ultimately result in
25 more money for publishers.

1 Q Did you provide this information to competing exchanges
2 participating through Open Bidding?

3 A Yes, we did.

4 Q And did you provide it to Authorized Buyers?

5 A Certainly we did.

6 Q And how about header bidding competitors?

7 A So with header bidding it's a little bit different
8 because in many cases Google doesn't have a relationship
9 with the header bidding partner, but we provide the
10 information to publishers in a form that they can then use
11 to pass to the header bidding partners because they can work
12 with header bidding partners we don't work with ourselves.

13 Q All right. Now moving to our final topic, Uniform
14 Pricing Rules.

15 When were Uniform Pricing Rules introduced?

16 A They were introduced as part of our move to the Unified
17 First Price Auction in September 2019.

18 Q What was your --

19 A I apologize. They were introduced slightly before
20 September but in 2019.

21 Q 2019 though?

22 A Yes.

23 Q And what was your role in introducing Uniform Pricing
24 Rules personally?

25 A I led that overall effort as part of our move to the

1 Unified First Price Auction.

2 Q Why were Uniform Pricing Rules introduced as part of
3 the move to a Unified First Price Auction?

4 A Just pricing rules are very different in a first-price
5 auction and in a second-price auction. And so it was an
6 appropriate time for us to change how pricing rules worked
7 to be relevant to the new auction type that we had.

8 Q How did Uniform Pricing Rules differ from what existed
9 before?

10 A Yeah. There are really three ways in which they were
11 different. One that I think is underappreciated was that
12 the old pricing rule system was extremely complicated.

13 So publishers could set many different pricing
14 rules. For example, you could set a rule that when a user
15 from Virginia comes to my website, I want to be paid a
16 minimum of \$4. You could have another rule that said when
17 somebody visits the sports section of my website, I want to
18 be paid a minimum of \$5.

19 Now, what do you do when somebody from Virginia
20 goes to the sports section, is the price \$4 or \$5? And
21 actually publishers would have to manually configure which
22 of these rules applies. That's fine when you have two
23 rules, but when you have dozens of them, it was extremely
24 complicated, and it was just a constant source of bugs.

25 And with Uniform Pricing Rules, we eliminated all

1 of that mixup and said the highest floor price applies.

2 The second way in which they were different is
3 that they were ultimately uniform in that the same floor
4 price applied to all the participants in the auction.

5 And the third way in which they were different is,
6 as I said, pricing rules just worked differently in a
7 first-price and a second-price auction. In a second-price
8 auction, the floor price can affect what the publisher gets
9 paid, and in a first-price auction that doesn't happen.

10 Q Turning to the last slide in your demonstrative, does
11 this help explain how price floors worked differently in a
12 first-price versus a second-price auction?

13 A It does, yes.

14 Q Can you walk us through that?

15 A Yes. Remember in the second-price auction, the auction
16 clears at the highest of the second highest bid and the
17 floor price. And so we have in all the examples two bids,
18 the highest bidder of \$10 and the second bidder bidding \$5.

19 Now, on the left we're looking at the second price
20 world. If the price floor is \$8 in that first example, then
21 the highest bidder wins and they pay \$8 because the auction
22 closes at the second highest bidder of the floor.

23 If the price floor was \$6, that bidder would win
24 and they would pay \$6 because the auction closes at the
25 second highest bidder of the floor. And if the price floor

1 were \$4, the auction would close at \$5 because that's the
2 second highest bid.

3 And so you see how the changing price floor
4 changes how much the publisher gets paid: \$8, \$6 and \$5.

5 On the right side of this graph, we have the same
6 three price floors: \$4, \$6 and \$8. But in the first-price
7 auction, the highest bidder wins and pays their bid. And so
8 if the floor price were \$4, the highest bidder would win and
9 pay their bid of \$10. If the floor price were \$6, the
10 highest bidder would win and pay their bid of \$10. If the
11 floor price were \$8, the highest bidder would pay \$10.

12 So the bidder pays the same amount and the
13 publisher gets paid the same amount regardless of the floor.
14 And so just the floors are playing a very different role in
15 these two worlds. In one world the floor affects the
16 payment and the other world has nothing to do with the
17 payment. And in fact, floor prices can only cause you to
18 reduce revenue in the short term in the first-price auction.

19 Q Now as part of your role in the ad serving and quality
20 team, did you and your team communicate with publishers
21 concerning feedback on Google's products and services?

22 A Yes. I regularly did.

23 Q And before the introduction of Uniform Pricing Rules,
24 had Google's publishers expressed views to you or your team
25 concerning their ability to manage the prior setup of

1 pricing rules?

2 A Yes, they certainly had. As I said, we regularly got
3 complaints and bugs and things.

4 Q Can you give us some ideas of some of that feedback you
5 received from customers?

6 A Specifically about the complexity of the old pricing
7 rules, we regularly got concerns like well I've set this
8 floor price of \$5, why am I only getting paid \$4, it's not
9 what I asked for. And you know, we would have to like
10 devote engineers to go and investigate those cases, and then
11 report, oh no, it's because you misconfigured this. You had
12 set this up in a way that maybe was not what you intended.

13 So we regularly got feedback like that on the old
14 complexity. We also got some feedback about the new pricing
15 rules as we announced them.

16 Q Before we get to the new pricing rules, did the
17 feedback you received on the old pricing rules have any
18 effect on Google's decision to introduce Uniform Pricing
19 Rules?

20 A Yes, it did. As I said, when we introduced the new
21 Uniform Pricing Rules, we were trying to partially address
22 that feedback.

23 THE COURT: All right. I think this is about the
24 right time to take our break. We'll be in recess until
25 11:30.

1 (A brief recess was taken.)

2 BY MR. MAHR:

3 Q Mr. Korula, before we turn to Uniform Pricing Rules,
4 just two clarifications.

5 One, you talked about pre-launch experiments and
6 holdback experiments.

7 Could you describe to the Court the difference
8 between those two types of excerpts at a high level?

9 A Certainly.

10 A pre-launch experiment is one that we typically
11 run before we make a change to the product and we're trying
12 to evaluate what would this change look like. So we're
13 trying to see does it work well, does it have the effect
14 that we expect. And if it works well, then we'll say great,
15 this is something we'll roll out to all of our publishers.

16 A holdback experiment --

17 THE COURT: I'm sorry, a what?

18 THE WITNESS: Holdback.

19 THE COURT: Holdback?

20 THE WITNESS: Holdback. Yes, ma'am. One word.

21 A holdback experiment is one that we typically run
22 after a feature is launched. And here, we'll roll out the
23 feature to all of the customers except for a small amount of
24 traffic. And we'll use that small amount of traffic to make
25 sure that the feature is continuing to work well, and we'll

1 ensure that there are no unexpected side effects or no
2 changes as the industry evolves.

3 BY MR. MAHR:

4 Q For pre-launch experiments, how many would you
5 typically run before a launch?

6 A Oh, that could vary a lot. There would be features
7 where we would run dozens of experiments even before a
8 launch to test many variants, we might learn something from
9 the experiment, go back and modify the feature. Could
10 easily be dozens, or even more in some cases.

11 Q How about for holdback experiments, how many would you
12 typically run?

13 A At any given time, we might be running a small number
14 of holdback experiments while we were running hundreds of
15 pre-launch experiments.

16 For a single feature, we might run dozens of
17 pre-launch experiments and one or two holdback experiments.

18 Q Why not rely on just one experiment?

19 A Because -- well, as we're developing the feature,
20 sometimes we're changing things.

21 But the holdback is very important because
22 conditions change. Something that seemed to work well today
23 might not work well a year from now as the industry evolves.
24 So it's very important to continue to have these experiments
25 to make sure that something you thought was an improvement

1 doesn't start working against what you expected in a year or
2 two years or three years.

3 Q Another clarification is in the waterfall. I just want
4 to make sure we're clear.

5 Who determines the historic value that is entered
6 for each publisher in the waterfall?

7 A If you mean who determines the historic value that is
8 entered for each publisher and ad exchange and network, then
9 the publishers determine that.

10 So when a publisher is setting up the ad exchanges
11 and networks, they enter a price for each exchange and
12 network, that, in many cases, is the historical average, but
13 it doesn't have to be. The publisher can enter any price
14 they want.

15 Q Just for the record, I asked that question wrong.

16 Who determines the historical value that is
17 entered for each exchange participating in the waterfall?
18 Who is that?

19 A So the publisher determines that for every exchange
20 they set up in participating in the waterfall.

21 Q I apologize for my mistake.

22 You said the publisher can put any value it wants
23 for that particular exchange in a waterfall?

24 A That's right.

25 Q Now, returning to Uniform Pricing Rules, we talked

1 about the input you got prior to the change to Uniform
2 Pricing Rules.

3 When Google announced Uniform Pricing Rules, were
4 you one of the team in display ads tasked with gauging and
5 responding to customer reaction?

6 A I was, yes.

7 Q How did publishers react to the introduction of Uniform
8 Pricing Rules?

9 A By and large actually many publishers were happy.

10 MR. VERNON: Objection to hearsay.

11 MR. MAHR: Your Honor, this is publisher reaction
12 to a change in products not because of the truth of their
13 reaction, but the effect it has on Google in responding to
14 those --

15 THE COURT: To the extent it explains what Google
16 may have done or not done, it is relevant, so I'm going to
17 permit it to come in for that purpose.

18 MR. MAHR: Thank you, Your Honor.

19 BY MR. MAHR:

20 Q Do you recall the question?

21 A Yes, I believe so.

22 Many publishers were happy with the change, but a
23 few publishers expressed some concerns that in some cases
24 caused us to modify Uniform Pricing Rules.

25 Q Do you have a recollection of which publishers had

1 negative reactions?

2 A It was some of our larger publishers. I think News
3 Corp was one of the most vocal, and perhaps also The
4 Guardian and The Daily Mail.

5 Q What kind of complaints did these larger publishers
6 have about Uniform Pricing Rules?

7 A There were three major sets of concerns. One was
8 around the number of pricing rules. Some publishers felt we
9 should give them the ability to create more.

10 THE COURT: All right. Explain that to me.

11 THE WITNESS: Yes, Your Honor.

12 Some publishers -- so when we rolled out the new
13 pricing rules, there was a limit on the number of pricing
14 rules that a publisher could create. You couldn't create
15 infinitely many. And some publishers said we like this, but
16 we wish you would allow us to create more pricing rules. So
17 we said you could have a limit of 100, and they said that's
18 not enough, we need more.

19 BY MR. MAHR:

20 Q So how did Google respond to that feedback from the
21 customers? Just staying with the first complaint.

22 A Yes. So we increased the number. So, by default, we
23 increased that number to 200 for all publishers, and we also
24 told publishers that if they needed it even more than that,
25 that they could come and talk to us and we would grant them

1 exceptions so they could go above 200. And many publishers
2 did that.

3 We also explained that with each of the new 200
4 pricing rules, publishers could create up to five
5 sub-pricing rules, and so that allowed for 1,000 different
6 sub-pricing rules. Each of which could have multiple
7 advertisers, up to 50 advertisers in one. And so with --
8 even with the new limits, publishers could have up to 50,000
9 advertisers named in these pricing rules.

10 And as I said, if that wasn't enough, we explained
11 that they could come and talk to us to get approved to have
12 even more.

13 Q And just so we're clear here, can you explain just
14 exactly what a pricing rule is?

15 A A pricing rule is essentially a publisher specifies a
16 part of their inventory, which could be a part of their
17 website or app. Like, you could say I want my home page to
18 be -- I want to get paid at least this much for my home
19 page. So you specify a part of the inventory and a minimum
20 price that you want to get paid for ads there.

21 So you could specify that as like my sports page,
22 I want to get paid this much. You could specify that like
23 users from this location, I want to get paid this much. Or
24 you could say for people on a laptop, I want to get paid \$6,
25 but for people using a mobile phone, I'm okay only getting

1 paid only \$4. There's many different ways publishers could
2 segment that.

3 Q Okay. You said there were three complaints. What was
4 the second?

5 A The second concern was that some publishers told us
6 that they had special relationships with some advertisers,
7 and they might want to offer a lower price to specific
8 advertisers.

9 We had anticipated the need to create higher
10 prices for specific advertisers, but they told us that in
11 some cases, perhaps they're working with a specific
12 advertiser who's done a large deal with -- via TV or via
13 print media, and as part of that large deal, they want to
14 give that advertiser a discount for their digital ads. And
15 so they said, well, this new UPR, functionality doesn't
16 allow us to easily do that.

17 Q How did Google respond to that second concern?

18 A We built functionality that allowed publishers to set
19 lower prices for specific advertisers.

20 Q And what was the third concern raised by some
21 publishers?

22 A The third concern was that some publishers said they
23 wanted to set different floor prices rather than uniform
24 ones. Typically they wanted to set a higher floor price for
25 AdX and a lower floor price for header bidding, for example.

1 Q Did they say why they wanted to do that?

2 A In some cases, they did. They said they wanted to give
3 a preference to header bidding to allow header bidding to
4 win more.

5 Q How did Google address this third concern?

6 A We didn't make a product change to address this concern
7 because we felt it was important for the product to be
8 designed in a way that the same pricing rules applied to
9 everybody. But I explained to the publishers that they
10 could achieve the outcome they wanted by adjusting the price
11 they entered in header bidding.

12 Your Honor asked the question earlier about what
13 price the publisher could enter when they created a header
14 bidding line item, and the publisher could use that to
15 essentially effectively set a lower floor.

16 For example, if the publisher wanted to set a
17 floor price of \$3 for header bidding and \$5 for AdX and Open
18 Bidding, they could set a floor price of \$5 in the Ad
19 Manager tool, and then when they got the \$3 or a \$4 bid from
20 header bidding, mark that as \$5 in Google Ad Manager. That
21 way that header bidding bid would be allowed to participate
22 because it would be above the \$5 floor and it could win if
23 it were the only competitor.

24 Q So now this one's a bit of a mouthful, so please bear
25 with me.

1 But it's been suggested that Uniform Pricing Rules
2 only prevented publishers from using pricing floors to
3 disadvantage Google but continued to allow publishers to use
4 pricing floors to disadvantage non-Google exchanges or
5 non-Google advertising buying tools; is that true?

6 A No, that's not true. The pricing rules applied to
7 everybody. The Uniform Pricing Rules don't allow you to say
8 I want to set a lower price for this person or that person.

9 In Google Ad Manager, the Uniform Pricing Rules
10 don't allow you to choose which buyer they apply to, so it's
11 the same for everyone.

12 Q Did Google benefit financially from the move to a
13 Uniform First Price Auction -- a Unified First Price Auction
14 and Uniform Pricing Rules?

15 A I think there was a small increase in net revenue in
16 the short term, but I think the benefit to Google was really
17 that we believed we could offer a better product to our
18 publishers and our advertisers by our customers.

19 Q If you would turn to Tab 6 in your binder to what's
20 marked as DTX 829, which has already been admitted into
21 evidence.

22 Can you take a minute and tell us whether you
23 recognize that document?

24 A Yes, I do.

25 Q Tell us what it is, please.

1 A Shortly after we completed the migration to the Unified
2 First Price Auction, a congratulatory email was sent out to
3 the teams involved, and this was that email.

4 Q And would you please turn to the second page of
5 DTX 829. A little more than halfway down the page there's a
6 section on why this launch was hard. And if you would
7 please read the last sentence of that paragraph, it's the
8 one -- it's the one beginning GDA and DV360.

9 A Yes. "GDA and DV360 were near neutral in revenue and
10 CPD impact recovering from the impact of the sell-side
11 auction changes."

12 Q And can you explain to us what that means?

13 A It means that Google Ads and DV360 lost a little bit of
14 revenue when we moved to the Unified First Price Auction but
15 not too much.

16 Q And would you read then the two sentences before the
17 one you just read starting with overall?

18 A "Overall, publishers experienced a neutral to positive
19 impact in revenue. Our top 500 publishers saw a median
20 increase of 2.7 percent in auction revenue. That is revenue
21 from AdX, Open Bidding, and remnant line items/header
22 bidding."

23 Q And can you tell us what that means in plain language?

24 A Publishers made more money.

25 MR. MAHR: No further questions, Your Honor.

1 THE COURT: All right. Cross-examination.

2 MR. VERNON: Jeff Vernon for the United States.

3 I will explain the binders since there are
4 multiple.

5 There are two smaller binders. The larger smaller
6 binder is the main set of documents. The smaller smaller
7 binder has two documents. And then there's a series of
8 deposition binders.

9 So, Mr. Korula, you should have two small binders,
10 and I think three big binders.

11 THE WITNESS: I only have one binder with --

12 THE COURT: He won't have room there for all of
13 them, so let's just have the two exhibit binders, and the
14 deposition binders let's keep it behind. We may not need
15 them.

16 MR. VERNON: That makes sense, Your Honor. Yeah,
17 I think we will mostly use the two smaller binders.

18 May we proceed?

19 THE COURT: Yes, sir.

20 CROSS-EXAMINATION

21 BY MR. VERNON:

22 Q Good morning, Mr. Korula. My name is Jeff Vernon. I
23 represent the United States.

24 A Good morning.

25 Q Let's start with your demonstrative which I believe was

1 Tab 2 in your binder. And please turn to the second page
2 that reads "get started with Google Ad Manager." And let me
3 know when you're ready.

4 A Yes. Yes.

5 Q So this is, I think, the very first page that a user
6 would see when they tried to get started with Google Ad
7 Manager; is that right?

8 A That's right.

9 Q And on this very first page, the website asks the user
10 if they are a web or video publisher on the one hand or an
11 app developer on the other hand; is that right?

12 A Yes, that's right.

13 Q So those are two different things on this line?

14 A They don't have to choose one or the other, they can
15 choose both.

16 Q But they are two different rows on the slide; correct?

17 A Yes, that's right.

18 Q And if you turn to the next slide, there's a page it's
19 marked DX 1.3; do you see that?

20 A Yes, I do.

21 Q This is the landing page for web and video publishers;
22 is that right?

23 A No. I think you come to this page also if you select
24 app developer, for example.

25 Q Okay. But it says web and video publishers at the top;

1 is that right?

2 A Yes. I think you have to at least have that selection,
3 yes.

4 Q Okay. And let's turn to page 10. I'm sorry, page 11.
5 It says the words "new report" in the top left.

6 A Yes.

7 Q At the bottom, there's a box that says --

8 MR. VERNON: It should be DX 11 -- or DX 1.11.

9 BY MR. VERNON:

10 Q At the bottom there's a box that says "inventory type";
11 do you see that?

12 A Yes.

13 Q And there are different inventory types, one of them is
14 web; do you see that?

15 A Yes.

16 Q And the other is app; do you see that?

17 A One of the others is app, yes.

18 Q So this page shows that within Google Ad Manager, web
19 and app are different inventory types; correct?

20 A Yes, that's right.

21 Q Now, let me ask you -- I'm going to ask you a few
22 questions about AdSense. And we'll come back to your
23 demonstrative, but for now I'd like you to turn to the
24 smaller of the small white binders. In the first tab, which
25 is marked PTX 1144.

1 THE COURT: Any objection to 1144?

2 MR. MAHR: No objection, Your Honor.

3 THE COURT: All right.

4 (Plaintiffs' Exhibit Number **1144** admitted into evidence.)

5 BY MR. VERNON:

6 Q Now, this is a page from -- I'm sorry. Are you ready?

7 A Yes.

8 Q This is a page from Google's website; is that right?

9 A Yes, it appears to be.

10 Q This page compares Google Ad Manager or Google AdSense
11 and Google AdMob; is that right?

12 A Yes.

13 Q And this is actually the page after the page that we
14 saw before. Meaning if you click on the page that says
15 "learn more about AdSense," this is where you go; correct?

16 A I believe that's correct. Either this page or
17 something very similar.

18 Q Okay. At the bottom, there's a paragraph that refers
19 to Google Ad Manager; do you see that?

20 A Yes.

21 Q The first line reads: "Google Ad Manager is an ad
22 management platform for large publishers who have
23 significant direct sales"; do you see that?

24 A Yes.

25 Q Now, let's compare that to the first sentence for

1 AdSense, which is at the top; do you see that?

2 A Yes.

3 Q And, I'm sorry, it's the second sentence. It reads:

4 "AdSense is best for publishers who want more automation for
5 their ad solutions and have a small dedicated ad management
6 team"; do you see that?

7 A Yes.

8 Q This paragraph about AdSense does not say that AdSense
9 is a product for big publishers with significant direct
10 sales; correct?

11 A That's right.

12 Q This web page that Google has created that compares
13 AdSense and Ad Manager describes them as being targeted
14 towards different customer segments; is that correct?

15 A That's right. It describes the customer segments for
16 which each product is likely best.

17 Q And they're different; that's fair?

18 A Yeah. There's some overlap, but they're different.

19 Q Okay. Let's turn to the next page, which we'll call
20 page 2.

21 If you look under common misperceptions, there's a
22 sort of second full paragraph that starts "Ad Manager is a
23 different product"; do you see that?

24 A Oh, yeah. I see that, yes.

25 Q This reads: "Ad Manager is a different product to

1 AdSense and AdMob"; right?

2 A That's right.

3 Q So this Google website is saying that AdSense on the
4 one hand and Ad Manager on the other hand are different
5 products; correct?

6 A Yes, that's right.

7 Q And there's a chart below that that compares the
8 features between the AdSense product, the Ad Manager
9 product, and we'll ignore these for now, but the AdMob
10 product; is that right?

11 A That's right.

12 Q And so if you look at the second row, it says: "Use
13 other ad networks or negotiate directly-sold ads." There's
14 a yes under Google Ad Manager and a no under Google AdSense?

15 A That's right.

16 Q That's because the publisher cannot use Google AdSense
17 to manage direct ads; correct?

18 A That's right.

19 Q The fourth row says: "Manage AdSense network compete
20 with other ad networks to maximum revenue." And there is a
21 yes under Google Ad Manager and no under AdSense; do you see
22 that?

23 A It says "make" and not "manage." But yes, I see that.

24 Q You're right.

25 And that's because a publisher cannot use Google

1 AdSense to have multiple networks or multiple exchanges
2 compete with each other; correct?

3 A Not in the AdSense product itself, no.

4 Q Okay. And that -- and if you use Ad Manager, you can
5 have multiple exchanges compete with each other; correct?

6 A That's right.

7 Q That's another reason why these are two different
8 products; correct?

9 A They offer different functionality, yes.

10 Q Okay. And a publisher cannot put AdSense in real-time
11 competition with other exchanges; is that correct?

12 A Yes, that's generally correct.

13 Q Okay. And as I think -- well, you weren't involved in
14 sales at any of your time at Google; is that right?

15 A I didn't work in sales, no.

16 Q So you wouldn't know how often large publishers switch
17 from Google Ad Manager to AdSense; correct?

18 A I couldn't give you a number, no.

19 Q Okay. Let's go back to your demonstrative which is in
20 the black binder at Tab 2.

21 Now I'm going to ask you to turn to, I think it's
22 slide 21. I'm sorry. Before we get to that.

23 When you went through your demonstrative, you
24 showed a series of features on Google Ad Manager; is that
25 right?

1 A Yes.

2 Q One of the features was reporting?

3 A Yes, that's right.

4 Q Another feature was, I think advertiser blocks; is that
5 right?

6 A Yeah. There was the ad review center where you could
7 block advertisers as well as advertiser protections or ad
8 content protections.

9 Q Other ad servers offered those features, too; correct?

10 A I believe so, though I'm not sure about the details.

11 Q Okay. Now we can go to Slide 21. And this time --
12 give me a second so I can get there.

13 Okay. As this total suggests, this slide relates
14 to Dynamic Allocation?

15 A Yes.

16 Q And Slide 22 also relates to Dynamic Allocation?

17 A Yes.

18 Q On Slide 22 --

19 MR. VERNON: I'm sorry. Go back to Slide 22 or
20 1.22. There we go. Thank you.

21 BY MR. VERNON:

22 Q This slide shows AdX as being the only exchange that
23 submits a real-time bid; is that right?

24 A That's right.

25 Q And AdX wins this impression?

1 A On Slide 22, yes.

2 Q AdX wins this impression because its real-time bid is
3 higher than the historic averages for the other exchanges;
4 is that right?

5 A That's right.

6 Q The historic averages that this slide refers to are
7 sometimes called static bids?

8 A Yes, sometimes.

9 Q And so the way that Dynamic Allocation worked -- and
10 we're talking about the pre-header bidding time period -- is
11 that AdX was sent a floor that was based on the highest of
12 the other static bids that were eligible for that
13 impression; correct?

14 A That's correct.

15 Q And after that, AdX would collect real-time bids from
16 buyers; is that right?

17 A That's right.

18 Q And if AdX -- if an AdX buyer had a real-time bid that
19 is higher than the floor based on static bids, AdX and its
20 buyer would win; is that right?

21 A Yes.

22 Q And this slide does not show any other exchanges
23 submitting a real-time bid before AdX; is that correct?

24 A That's correct.

25 Q And that's because AdX, under Dynamic Allocation, had

1 the opportunity to submit real-time bids first, and if it
2 could beat the floor based on static bids, it won the
3 impression and no other exchanges could bid; correct?

4 A Yes, that's correct.

5 MR. VERNON: Now let's turn to the next slide,
6 which is Slide 23. Or 1.23. It's the waterfall with the
7 blue one at the beginning. There we go. Thank you.

8 BY MR. VERNON:

9 Q Okay. So this slide shows AdX in orange; is that
10 right?

11 A Yes.

12 Q Orange/yellow.

13 A Yes.

14 Q And in this auction, again, AdX is called first and it
15 gets to collect real-time bids; is that right?

16 A That's right.

17 Q But its real-time bid is not higher than the highest
18 historical average; correct?

19 A That's correct.

20 Q But AdX is still called first to run a real-time
21 auction; right?

22 A Yes.

23 Q Okay. So the ranking of these exchanges where there's
24 Number 1, Number 2, Number 3, Number 4 and Number 5, that's
25 a ranking that just shows how the historical averages

1 compare to AdX's real-time bid; right? PubMatic has the
2 highest historical average, Index has the second highest, et
3 cetera?

4 A It shows the ranking and the sequence in which the
5 exchanges would be called.

6 Q But this ordering of the exchanges has nothing to do
7 with the fact that AdX was first called to submit a
8 real-time bid, and if it could not have a bid above the
9 floor, then the other exchanges could compete; right? Those
10 are different things?

11 A That's right. This is the ordering in which the
12 exchanges have the opportunity to serve an impression.

13 Q Okay. But even under this ordering, AdX still has the
14 first chance to run a real-time auction and win; right?

15 A That's right.

16 Q Okay. Now we are going to turn to last look.

17 So after bidding, AdX's first position turned into
18 a last position; is that fair?

19 A I'm sorry. I don't follow that.

20 Q When header bidding arose, AdX had the last look over
21 header bidding; correct?

22 A Yes. That was referred to as last look.

23 Q And I think you said at some point AdX's last look was
24 removed over Open Bidding; is that right?

25 A I didn't say that, but you're correct that that is what

1 happened.

2 Q Okay. And when was that?

3 A I believe it was in 2017, but I'm not sure of the exact
4 date.

5 Q So before that time, which we'll just call 2017 for
6 convenience, AdX still had a last look over all the other
7 exchanges; correct?

8 A Oh. The thing that was called last look over Open
9 Bidding was a different thing from the last look over the
10 other exchanges.

11 Q Before Open Bidding was launched, let's start there.

12 A Yes.

13 Q Before that, AdX had a last look over other exchanges;
14 correct?

15 A That's right. It had -- yes.

16 Q After Open Bidding was launched, last look still -- AdX
17 still had a last look over header bidding; is that correct?

18 A Over header bidding, yes.

19 Q You also talked about what would happen if there were
20 multiple bids above the floor in the last look era; do you
21 remember that?

22 A Yes.

23 Q Let's talk about what would happen if there was only
24 one bid above the floor; okay?

25 A Okay.

1 Q At that point, AdX ran a second-price auction?

2 A Yes.

3 Q And so if AdX only had one bid above the floor, the
4 price that AdX wins at and that the AdX buyer wins at would
5 automatically either match the highest other bid or be a
6 fraction of a set higher; is that right?

7 A Yes, that's right.

8 Q And you don't know how often that happened; right?

9 A Meaning exactly how many impressions happened per day
10 like that? I don't know the raw number of impressions.

11 Q Okay. And you're also aware of sell-side DRS; is that
12 right?

13 A Yes.

14 Q And you worked on that; is that fair?

15 A Yes.

16 Q Under sell-side DRS, AdX could reduce its take rate
17 after seeing the highest other bid from header bidding; is
18 that right?

19 A Under sell-side Dynamic Revenue Share, yes, AdX could
20 adjust its revenue share.

21 Q And when AdX does that, it could win for a fraction of
22 a cent above the highest bid from header bidding; correct?

23 A It could, yes, though that wasn't the common case.

24 Q Let's turn to Slide 24, it's titled "Dynamic Revenue
25 Share DV1."

1 MR. VERNON: Dynamic Revenue Share V1. It's the
2 slide before this one. I think the pages may have differed
3 in some of our versions.

4 BY MR. VERNON:

5 Q Okay. So this shows AdX lowering its take rate under
6 Dynamic Revenue Share?

7 A Yes, that's right.

8 Q So this slide does not show AdX increasing its take
9 rate; right?

10 A That's right. We didn't do that in Dynamic Revenue
11 Share Version 1.

12 Q But at some point when Google launched Version 2, under
13 Dynamic Revenue Share, AdX could increase its take rate;
14 correct?

15 A Correct.

16 Q And you didn't show that here in this slide; right?

17 A No.

18 Q This slide also shows AdX using Dynamic Revenue Share
19 to win a transaction that otherwise would have not cleared;
20 is that right?

21 A That's right.

22 Q But last look and Dynamic Revenue Share also allowed
23 Google to win a transaction that otherwise would have been
24 won by another exchange; is that correct?

25 A That is correct, though as I said, that was not the

1 common case.

2 Q And this slide doesn't show that; right?

3 A This slide doesn't show that, no.

4 Q You also talked about the effect of last look on
5 publisher revenue; do you remember that?

6 A I briefly alluded to it, yes.

7 Q I think you said that publishers could not stop Google
8 Ad Manager from sending a floor price that is based on the
9 highest other line item; is that right?

10 A Prior to 2019, that's correct.

11 Q Right. And so another way of saying that is publishers
12 could not turn last look off; correct?

13 A That's correct.

14 Q If a publisher thought turning last look off would make
15 them more money, that wasn't an option that they had
16 available; correct?

17 A That's correct.

18 Q Okay. Let's turn to some documents. So you can set
19 aside the black binder and pick up the slightly larger white
20 binder. So I'm going to ask you about PX 797.

21 THE COURT: Any objection to 797?

22 MR. VERNON: Which is -- you don't have the
23 binder? Oh, we can give you the binder.

24 PX 797 is a document from your files, and the
25 metadata is in -- or some of the metadata is in the next

1 tab, if that helps.

2 THE COURT: I assume there's no objection if it's
3 a Google document.

4 MR. MAHR: No objection, Your Honor.

5 THE COURT: All right. It's in.

6 (Defense Exhibit Number 797 admitted into evidence.)

7 BY MR. VERNON:

8 Q So on your direct, you talked about how DFP is very
9 flexible; is that right?

10 A Yes.

11 Q But you would also agree that one of the biggest
12 selling points of DFP is that it provides access to unique
13 demand from what's known as Google Ads and sometimes also
14 called GDN; is that right?

15 A No, I don't think that's quite right.

16 Q Well, let's look at this document.

17 So this was a document prepared in preparation for
18 a strategic planning session; is that right?

19 A It seems to be.

20 Q In preparation for that strategic planning session,
21 participants were given a series of questions that they were
22 supposed to answer; is that right?

23 A I think that's right.

24 Q And if you look at the metadata tab, which is the next
25 tab, you'll see the E subject is Nitish Ad Manager strategic

1 planning homework; do you see that? It's in E subject about
2 half the way down. So it's the next tab after 797. It's
3 like a box tab.

4 A Oh, I see. It's a different tab. Okay. Yes.

5 Q And the file name is Nitish Ad Manager strategic
6 planning; do you see that?

7 A Yes, I do.

8 Q Now turning back to 797 itself. Do you have --

9 THE COURT: Counsel, it's lovely to have your loud
10 voice; it's too loud.

11 MR. VERNON: I apologize. I'll tone it down.

12 BY MR. VERNON:

13 Q Do you have any reason to believe that you did not
14 write 797?

15 A No. If this subject is correct, then I think I likely
16 wrote this.

17 Q So let's turn to the second page in --

18 MR. VERNON: And, Your Honor, please tell me if
19 I'm speaking too loud. I apologize.

20 BY MR. VERNON:

21 Q -- there is a box titled strengths.

22 A Yes.

23 Q And I'll give you the first one, the first one says
24 "the best ad server in the market"; is that right?

25 A That's right.

1 Q It's easy to be the best ad server in the market when
2 there aren't that many others; correct?

3 A I don't think it was easy to actually offer all of the
4 functionality that DFP did, no.

5 Q You only identify one competing ad server in the box to
6 the right, that's AppNexus?

7 A That's right.

8 Q You don't list any other ad server competitors by name;
9 is that correct?

10 A That's correct.

11 Q You do not list Kevel?

12 A I did not list it, no.

13 Q Can you identify by name any publishers that switched
14 from DFP to Kevel?

15 A No, I wouldn't know.

16 Q You do not list OpenX here?

17 A I do not, no.

18 Q Can you identify by name any publishers that switched
19 from DFP to OpenX?

20 A I don't believe I can, no.

21 Q The second strength you list here is access to unique
22 demand; is that right?

23 A Yes.

24 Q To the right of that, you write "GDN/GMob demand is
25 relatively unique"; right?

1 A That's right.

2 Q So you're describing GDN and its unique demand as a
3 strength for Google Ad Manager; correct?

4 A That seems to be what I wrote, yes.

5 Q Let's look at the next box titled weaknesses.

6 A Uh-huh.

7 Q The second box is reduced publisher trust; do you see
8 that?

9 A I do.

10 Q To the right of that you write: "Publishers perceived
11 that Google acts unilaterally in its own best interest or
12 that it claims to know what is best for others"; do you see
13 that?

14 A Yes.

15 Q And you identified that as a weakness?

16 A I did.

17 Q If it helps, the metadata shows that the date saved for
18 this was July of 2019.

19 Do you think you were referring to UPR here?

20 A I don't recall what I was referring to. Sorry.

21 Q This would have been around the time of UPR, though;
22 right?

23 A Yes.

24 Q And you were aware that publishers did perceive that,
25 with respect to UPR, Google was acting unilaterally in its

1 best interest; correct?

2 A I think some publishers perceived that, but many others
3 did not.

4 Q Okay. You can set that aside.

5 On your direct, you talked about there being
6 different ways for publishers to access AdX without using
7 DFP; do you remember that?

8 A Yes.

9 Q One of them is a publisher can use two ad servers;
10 correct?

11 A That's right.

12 Q You would use DFP and then another ad server under that
13 system?

14 A That's right.

15 Q And you have expressed skepticism that this two ad
16 server system will gain traction; is that correct?

17 A I don't recall specifically. I'm sorry.

18 Q Let's turn to page -- I'm sorry, to document PTX 949.

19 THE COURT: Any objection?

20 MR. MAHR: Just getting to it, Your Honor.

21 No objection.

22 THE COURT: All right. It's in.

23 (Plaintiffs' Exhibit Number 949 admitted into evidence.)

24 BY MR. VERNON:

25 Q This is a series of chats between you and --

1 A I'm sorry. I haven't found it yet. I'm sorry.

2 Q No worries.

3 A I think I have it.

4 Q It's towards the middle.

5 A Yes.

6 Q This is a series of chats between you, Noam Wolf and
7 Deepti Bhatnagar?

8 A Yes, that's right.

9 Q Was Noam your boss at the time?

10 A Yes, he was.

11 Q Let's turn to the top of page 2 or the top of the page
12 ending in 481.

13 A Yes.

14 Q I'm sorry. The middle of the page.

15 Towards the middle in a message at 11:28, there's
16 a message from you that starts with "how likely"; do you see
17 that?

18 A I do.

19 Q You write: "How likely is the dual ad server system to
20 get real adoption?" Do you see that?

21 A Ad server setup. But, yes, I do see that.

22 Q You're right. I'm sorry.

23 So you were expressing some skepticism here that
24 the dual ad server setup would gain real adoption; correct?

25 A As I'm reading it now, it's not clear. It might be

1 skepticism, it might be a genuine question how likely is
2 this to happen.

3 Q Okay. This is a series of chats; is that fair?

4 A Yes. From the context that looks like a series of
5 chats we were doing during a live meeting.

6 Q And this chat includes discussion of substantive
7 issues, not merely something like scheduling a meeting;
8 correct?

9 A That's right.

10 Q You actually turned history on; is that right?

11 A In this chat?

12 Q In general.

13 A Oh. Generally speaking, I have done, particularly
14 after receiving a litigation hold notice.

15 Q And if you and the other participants in this chat did
16 not turn history on, we wouldn't have it today; correct?

17 A I think that's right, yeah.

18 Q And if you look at the sixth chat from the top from
19 you, do you see that? It starts with "and losing some
20 market share."

21 A Yes.

22 Q "Is also positive from the point of demonstrating to
23 regulators that viable alternatives exist/we are not a
24 monopoly"; do you see that?

25 A I do.

1 Q So, again, this is a discussion of a substantive issue
2 in a chat; is that right?

3 A Yes, that's right.

4 Q Okay. You can set that document aside. And then
5 please turn to 933.

6 THE COURT: Any objection to 933?

7 THE WITNESS: I'm sorry. If you don't mind, could
8 you tell me which part of the binder it's in?

9 MR. VERNON: There's like a top tab, if that
10 helps, and it's just before the last one.

11 THE WITNESS: I found it.

12 MR. MAHR: And no objection, Your Honor.

13 THE COURT: All right. It's in.

14 (Plaintiffs' Exhibit Number 933 admitted into evidence.)

15 BY MR. VERNON:

16 Q Okay. So this is another series of chats between you,
17 Gregory Donaker and Deepti Bhatnagar; is that right?

18 A Yes, that's right.

19 Q And your top message refers to the AdX direct; do you
20 see that?

21 A Yes.

22 Q And you described AdX direct as a concept for
23 antitrust; do you see that?

24 A I see the words "concept for antitrust." I don't know
25 if that's a description of AdX that's a concept for

1 antitrust.

2 Q But that's what you wrote?

3 A I used those words, yes.

4 Q And, again, this is another set of substantive chats;
5 is that right?

6 A Sure. Yes.

7 Q Okay. You can set that one aside.

8 During your direct, you mentioned that AdX does
9 not submit a real-time bid, you say, to DFP; do you remember
10 that?

11 A I do, yes.

12 Q But DFP does send a floor to AdX?

13 A That's right.

14 Q And that floor can be based on the highest bid from
15 header bidding; is that right?

16 A Not anymore, no.

17 Q Once AdX receives the floor from DFP, AdX compares the
18 highest real-time bid from the AdX buyers to the floor that
19 AdX gets from DFP; is that right?

20 A That's correct.

21 Q So a publisher can use Google Ad Manager to compare, on
22 the one hand, a real-time bid from AdX, and, on the other
23 hand, a real-time bid from another exchange; is that right?

24 A That's right.

25 Q And a publisher can also use Open Bidding within Google

1 Ad Manager to compare a real-time bid from AdX to real-time
2 bids from other exchanges; correct?

3 A That's correct.

4 Q Okay. So you do not dispute that publishers that use
5 DFP can compare real-time bids from AdX and other exchanges;
6 correct?

7 A That's correct. I don't dispute that.

8 Q And you are aware that publishers have told Google that
9 it's very difficult to use another ad server, meaning not
10 DFP, and compare real-time bids from AdX to real-time bids
11 from other exchanges; correct?

12 A I believe that it's not as easy as our integrated
13 product makes it.

14 Q Okay. So you are aware that for publishers that do not
15 use DFP, it's not as easy to compare real-time bids from AdX
16 to real-time bids from other exchanges; correct?

17 A I think that's right, yes.

18 Q Okay. So let's change topics a little bit and now talk
19 about -- I think we are up to a question I have for you
20 about UPR.

21 You talked about the difficulty of what would
22 result if Google were to try to do certain things, like, for
23 example, provide real-time bid; do you remember that?

24 A Yes, I do.

25 Q Well, let's ask about UPR.

1 Before 2019, Google did allow publishers to set
2 different floors for different exchanges within Google Ad
3 Manager; correct?

4 A No, that's not correct.

5 Q I'm sorry. I'll try again.

6 Before 2019, meaning before UPR, Google did allow
7 publishers to set a different floor for AdX compared to
8 another exchange; correct? That was the functionality that
9 UPR took away?

10 A That's not quite right either.

11 Q Can you explain why?

12 A Yeah.

13 Before UPR, Google Ad Manager only allowed
14 publishers to set floor prices for AdX, and there were no
15 floor prices that could apply to any other exchanges, the
16 same or different or anything. Floor prices only applied to
17 AdX.

18 Q I see. Let me try again.

19 Prior to UPR, a publisher using Google Ad Manager
20 could set different floors for AdX compared to other
21 exchanges; is that fair?

22 A That's correct, yes.

23 Q And then with the launch of UPR, Google redesigned its
24 system such that, within Google Ad Manager, a publisher
25 cannot set different floors for different exchanges;

1 correct?

2 A That's correct.

3 Q And that was a choice that Google made; right?

4 A Yes.

5 Q Google could have decided to allow publishers to set
6 different floors for different exchanges within Google Ad
7 Manager; correct?

8 A Yes.

9 Q And you didn't say on direct that giving a publisher
10 that choice would be unnecessarily difficult for Google;
11 right?

12 A No, I didn't say that.

13 Q And let's ask about last look.

14 I think I have this right timing-wise. Google
15 removed last look as -- I'm sorry -- at the same time as it
16 launched the Unified First Price Auction and UPR and other
17 changes like Smart Bidding; is that right?

18 A Yes to all but the Smart Bidding part. What exactly
19 are you referring to by Smart Bidding?

20 Q I think it's not 100 percent essential, but I believe
21 there was a change to how AdX's buyers submitted bids to
22 respond to the change to a first-price auction; is that
23 roughly right?

24 A I see what you mean.

25 Yes, we did all of those things at the same time.

1 Q Okay. So there was a bundle of changes, including the
2 removal of last look that happened at the same time?

3 A That's correct.

4 Q To remove last look, Google changed the floor sent to
5 AdX buyers such that the floor no longer incorporated
6 information about the highest other bid set by header
7 bidding; right?

8 A Yes, that's right.

9 Q And you didn't say on direct that making that one
10 specific change, meaning removing last look, was
11 unnecessarily difficult; correct?

12 A No, I didn't say that.

13 Q Okay. So now let's talk about the difficulty of
14 providing real-time prices to other ad servers.

15 You talked about that on direct; do you remember
16 that?

17 A Yes.

18 Q Are you familiar with Yavin?

19 A With Yavin?

20 Q Yes.

21 A Yes.

22 Q Yavin is a moon in Star Wars?

23 A Yes.

24 Q Yavin is also a project within Google under which
25 Google provided real-time bids to a small number of

1 publishers that used in-house ad servers; is that correct?

2 A That's generally correct, yes.

3 Q And I think before the fall of 2013, the only
4 publishers that were hooked up to that project, Project
5 Yavin, were LinkedIn and eBay; is that right?

6 A Did you say the fall of 2013?

7 Q You're right. I'm wrong.

8 Before the fall of 2023, the only publisher
9 customers that used Google's Project Yavin were LinkedIn and
10 eBay; is that right?

11 A I'm not entirely sure. Sorry. That was after I left
12 display ads.

13 Q Okay. Well, you are aware that Google's Project Yavin
14 was not provided to publishers that used competing ad
15 servers, meaning ad servers like Xandr; correct?

16 A Yes, that's right, because it was only providing demand
17 from Google Ads or DV360; it wasn't actually the exchange
18 demand.

19 Q Okay. So through Project Yavin, Google provided
20 real-time prices from Google's demand sources to a small
21 number of publishers that used in-house ad servers; is that
22 correct?

23 A From Google Ads and DV360, yes.

24 Q But Google did not do that for publishers that used
25 Xandr; correct?

1 A That's right. Though DV360 could buy directly on
2 Xandr's AppNexus exchange, and it did.

3 Q So Google, through Project Yavin, has already developed
4 a technology to provide real-time prices to publishers that
5 use an ad server other than DFP; is that right?

6 A No, that's not quite right.

7 Q Google has already developed a technology to provide
8 real-time prices from Google's demand sources to publishers
9 that use in-house ad servers, not DFP; correct?

10 A That's right. From Google Ads and DV360 specifically,
11 yes.

12 Q Okay. And so now that Google already offers these
13 real-time bids to a small number of publishers with in-house
14 ad servers, it would be less costly to provide real-time
15 bids to other customers than it would be if Google had not
16 already built this technology; correct?

17 A No, that's not right.

18 Q Well, Google's already built a fair amount of the
19 technology behind Project Yavin; is that right?

20 A That's right, but it's different technology.

21 Q Project Yavin exists; right?

22 A I believe we shut it down, actually.

23 Q When was that?

24 A I don't recall. As I said, I don't work in display ads
25 anymore.

1 Q Okay. Are you sure Google shut Project Yavin down?

2 A I'm not sure. That's my belief, but I don't know for
3 sure.

4 Q Once Google started offering Project Yavin, it would be
5 less costly to integrate Yavin with other publishers than it
6 would be before Google had launched Project Yavin; correct?

7 A Did you say integrate Yavin with other publishers?

8 Q I can reask.

9 A Sure.

10 Q Google has already developed the technology for Project
11 Yavin; right?

12 A Yes, that's right.

13 Q Google's already done a fair amount of the work; is
14 that fair?

15 A A fair amount of the work for Yavin, which is distinct
16 from the work to have AdX submit real-time bids to
17 third-party ad servers.

18 THE COURT: I'm sorry. You need to keep your
19 voice up.

20 THE WITNESS: I'm sorry, Your Honor.

21 It's developed the technology for Yavin, which is
22 distinct from the technology to provide AdX bids to
23 third-party ad servers.

24 BY MR. VERNON:

25 Q We have the opposite problem about the voices.

1 A Sorry. I'll try to get that right.

2 Q That's okay.

3 So now that Google has already developed Project
4 Yavin and has offered it to a small number of customers, to
5 sign up a new customer for Yavin would take less work than
6 it would before Google had developed Yavin at all; is that
7 fair?

8 A A new customer for Yavin, that would be the case if we
9 hadn't stopped Yavin, which I believe we have and so now it
10 might actually be a substantial amount of work again.

11 Q Okay. But you don't know whether Google stopped Yavin;
12 correct?

13 A I don't know for sure.

14 Q And so setting that aside, now that Google has already
15 developed Project Yavin, it would take less work to sign up
16 a new publisher for that; correct?

17 MR. MAHR: Your Honor, objection. The witness has
18 testified that he wasn't here during the development of
19 Yavin.

20 THE COURT: Sustained.

21 MR. VERNON: But let me correct that. He was here
22 during the development of Yavin, which will matter for my
23 next document, but I can move on to that document now.

24 Please turn to PTX 555.

25 THE COURT: Any objection?

1 MR. MAHR: No objection, Your Honor.

2 THE COURT: All right. It's in.

3 (Plaintiffs' Exhibit Number 555 admitted into evidence.)

4 BY MR. VERNON:

5 Q This is an email from Project Yavin --

6 A I haven't found it yet. I'm sorry. Also, I only just
7 realized that you've thoughtfully ordered them in sequence,
8 so I will be faster about finding them subsequently.

9 Q Sure. It's almost like a waterfall.

10 Okay. So PTX 555 is a document about Yavin, you
11 can see that from the subject?

12 A Oh, sorry. Yes, that's right.

13 Q Let's look about halfway down the page to general
14 Demand Product learnings from conversation, the first bullet
15 point under that; do you see that?

16 A The first bullet point under general Demand Product
17 learnings, yes.

18 Q This writes: "AdX is disadvantaged in 'AdX direct'
19 relationship because AdX does not integrate with other ad
20 servers as well as it does with DFP (no Dynamic Allocation)
21 so AdX does not pass through real-time bids to those other
22 ad servers (instead, it passes through a dumb flat CPM based
23 on historical averages)"; do you see that?

24 A I do, yes.

25 Q And that's consistent with your testimony that AdX

1 direct does not pass real-time bids to other ad servers; is
2 that correct?

3 A Part of it is consistent with my testimony, but the
4 other part is not, and it reflects a misunderstanding.

5 Q Let's turn to the top of the page ending in 116 or the
6 second page.

7 There's a Question 2, and this reads at the very
8 top: "Who, if anyone, would work with pubs to try to
9 optimize/drive more revenue through Demand Product"; do you
10 see that?

11 A Yes.

12 Q And if you look two bullet points below there, there's
13 an answer. "Demand Product probably won't require much
14 optimization, though. Post launch, it will really be just a
15 matter of making more inventory available and adjusting
16 advertisers/category blocks"; do you see that?

17 A I do.

18 Q So what this is saying is after the launch of Yavin,
19 there won't be that much optimization work that needs to be
20 done; is that correct?

21 A It is correct that's what it says, but absolutely
22 incorrect as a matter of fact.

23 Q Okay. Your counsel can ask you about that.

24 MR. VERNON: Please turn to PTX 113, which the
25 United States will move to admit.

1 THE COURT: Any objection? It's the first one in
2 the book.

3 MR. MAHR: Now that Mr. Korula has unlocked the
4 secret to the binder.

5 MR. VERNON: To the waterfall.

6 MR. MAHR: No objection, Your Honor.

7 THE COURT: All right. It's in.

8 (Plaintiffs' Exhibit Number 113 admitted into evidence.)

9 BY MR. VERNON:

10 Q This is a document with the title "growing AdX" at the
11 top; do you see that?

12 A Yes.

13 Q And it's a document where some sell-side employees at
14 Google discuss ideas for improving Google Ad Manager; is
15 that fair?

16 A That seems to be, yes. I haven't seen this document
17 before.

18 Q There's a paragraph that starts with: "The press
19 release we could issue if we do this"; do you see that?

20 A Yes, I do.

21 Q And it reads: "DoubleClick ad exchange doubles again
22 through better integration with DFP and third-party ad
23 servers. The DoubleClick ad exchange has become the de
24 facto standard for publishers to manage their indirect
25 relationships"; do you see that?

1 A Yes.

2 Q And let's turn to the second page.

3 There's a second row that starts with "open
4 Dynamic Allocation to third-party ad servers"; do you see
5 that?

6 A Yes.

7 Q This then says: "Dynamic Allocation for third parties
8 is available today but in beta."

9 Beta, I guess, means beta testing; is that right?

10 A That's right.

11 Q "Minimal effort is required to roll out more broadly";
12 do you see that?

13 A I do, yes.

14 Q Okay. So this document is not saying that opening up
15 Dynamic Allocation to third-party ad servers would be
16 difficult; is that fair?

17 A That's right. This document doesn't appear to say
18 that.

19 Q And there's a column that is titled risks; do you see
20 that?

21 A Yes.

22 Q And the risk that's identified here, if Google were to
23 open up Dynamic Allocation to third-party ad servers, is
24 that it would take away a key differentiator for DFP; is
25 that right?

1 A Yes, that's right.

2 Q Okay. You can set that document aside.

3 Last look, when you were discussing it on your
4 direct, you described it as being based on a principle; do
5 you remember that?

6 A Yes, that's right.

7 Q Last look also gave AdX an advantage; correct?

8 A AdX and Open Bidding buyers, it allowed them to bid
9 more efficiently, yes.

10 Q And just make sure I understand what you're saying, you
11 do agree that last look gave AdX an advantage; correct?

12 A Yes. The same advantage to AdX and Open Bidding
13 buyers.

14 MR. VERNON: Okay. And let's look at PTX 816,
15 which the United States will move to admit.

16 THE COURT: Any objection?

17 MR. MAHR: No objection, Your Honor.

18 THE COURT: It's in.

19 (Plaintiffs' Exhibit Number 816 admitted into evidence.)

20 BY MR. VERNON:

21 Q This is a series of chats between you and David
22 Christian?

23 A Yes, it seems to be.

24 Q And about halfway down the page, there's a message from
25 you that begins with the words "the fact that"; do you see

1 that?

2 A That's right.

3 Q You write: "The fact that AdX buyers can bid using
4 information that comes out of DFP rankings (EDA price,
5 remnant line items with third prices, et cetera) is a
6 significant informational advantage"; do you see that?

7 A I do.

8 Q So here, you are describing a few different
9 informational advantages that AdX buyers had over other
10 exchanges; is that right?

11 A Again, AdX buyers and Open Bidding exchanges had, but
12 yes.

13 Q And one of those informational advantages was last
14 look; correct?

15 A That's correct.

16 Q That's what the remnant line items with their prices,
17 part of the parentheses, refers to?

18 A That's right.

19 Q And three messages down from that you write: "It's a
20 strategic advantage over header bidding"; do you see that?

21 A Yes.

22 Q In the next message you right: "Now, competition
23 concerns will cause us to give up one part of that"; do you
24 see that?

25 A Yes, I do.

1 Q And the part of that that you're referring to is last
2 look?

3 A That's right.

4 Q At the very end you write: "BTW" -- that's by the way?

5 A Yes.

6 Q -- "this is also sensitive from a competition
7 perspective, so one should be careful about notes." Smiley
8 face. Do you see that?

9 A I do, yes.

10 Q And, again, this is a series of chats that discusses
11 substantive issues like advantages over header bidding and
12 competition concerns; is that right?

13 A That's right.

14 Q Okay. You also talked -- you can set that aside --
15 about what I think you referred to as a boost; do you
16 remember that?

17 A Yes.

18 Q I think technically what that is is inflating the VCPM
19 that's associated with a line item; is that correct?

20 A That's correct.

21 Q And you described that in conjunction with your
22 discussion of last look; do you remember that?

23 A I don't believe it was in conjunction with last look.
24 I think it was when I was describing how to set up a price
25 priority line item.

1 Q I'll try to -- you discussed it in connection with UPR;
2 is that fair?

3 A I see. I didn't use the word boost then, but earlier,
4 but we brought up again the fact that publishers could
5 change the value in connection with UPR, yes.

6 Q You don't have any idea of how often publishers
7 actually do this type of boost; correct?

8 A I don't have any data now, but my understanding at the
9 time was that it was quite common.

10 Q But you don't have any data to back that up; right?

11 A I don't have any current data, no.

12 Q And you are aware that publishers viewed their -- as
13 being downsides to this type of boost; right?

14 A Yes, there were some downsides.

15 Q And what were the downsides?

16 A Primarily that it was inefficient in that setting
17 different floor prices could lead to inconsistent outcomes.

18 If you did want to set different floor prices, it
19 wouldn't actually necessarily lead to a bidder winning with
20 a lower bid if you specifically read it in the full-price
21 context. But if you just universally apply the boost, it
22 could be insufficient.

23 Q Publishers also believed there were downsides with
24 respect to reporting; is that fair?

25 A I think in some cases, yes.

1 Q Okay. That's one of the downsides that The Guardian
2 identified to you when you tried to describe this as an
3 alternative to UPR; correct?

4 A I don't recall that specifically coming up in that
5 conversation. Sorry.

6 Q It's okay. We can move on. Let's discuss UPR briefly.
7 Google adopted UPR at the end of 2019; is that
8 right?

9 A In September of 2019.

10 Q And UPR eliminated a tool that publishers used to
11 reduce their dependence on Google; correct?

12 A I wouldn't quite characterize it like that, no.

13 Q Let's turn to PTX 609, which has already been admitted.
14 Let me know when you're there.

15 A Yes.

16 Q So at the bottom of the page there's an email from
17 Rahul Srinivasan; do you see that?

18 A Yes, I do.

19 Q He lists four reasons why publishers set higher floors
20 for AdX; do you see that?

21 A That's right.

22 Q And then there's an email from you right after that?

23 A Yes.

24 Q In your second paragraph -- or the second full
25 paragraph, you list a fifth reason why publishers floored

1 AdX higher; do you see that?

2 A I do, yes.

3 Q You write: "There's also Number 5, some perceived
4 benefit from wanting revenue diversity. Publishers have
5 indicated being willing to tolerate some revenue loss in
6 exchange for reduced dependence on both GDN/DBM and Google,
7 including RTBs as a whole"; do you see that?

8 A Yes, I do.

9 Q And so what you were saying here is that prior to UPR,
10 publishers set higher floors from AdX to reduce their
11 dependence on Google; correct?

12 A I listed it as one of the reasons, but in the
13 second-price auction, not in the first-price auction.

14 Q Okay. But that is one of the reasons you list here; is
15 that right?

16 A That's right.

17 Q Even in a first-price auction, if you send a higher
18 floor to AdX, that would mean AdX would win fewer
19 impressions; correct?

20 A Yes, that's correct.

21 Q And that would allow publishers to reduce their
22 dependence on Google; right?

23 A It would allow them to reduce the revenue they got from
24 Google, yes.

25 Q Okay. And that's the same thing as dependence, right?

1 A I don't think revenue and dependence are quite the same
2 thing, but ...

3 Q A publisher might perceive it that way; fair?

4 A Possibly.

5 Q Okay. Let's talk about how UPR affects the floors
6 mechanically.

7 A Okay.

8 Q So you were aware that exchanges other than AdX have
9 their own floor tools; is that right?

10 A That's right.

11 Q And UPR doesn't change how a publisher can use the
12 floor tools in those other exchanges; correct?

13 A That's right. UPR doesn't do anything to the floor
14 tools in other exchanges.

15 Q If a publisher after UPR sets a floor -- a unified
16 price floor in Google Ad Manager and a higher price floor
17 for a specific other exchange within that other exchange,
18 that other exchange only wins if their bidders clear the
19 higher floor; correct?

20 A Yes, that's correct.

21 Q Okay. So the way that this works effectively after UPR
22 is that through these combination of floor tools, publishers
23 after UPR can still set a higher floor for other exchanges
24 than for AdX; is that right?

25 A If they want to use the other exchanges' tools and set

1 a higher floor price for that exchange in that exchange's
2 tools, UPR certainly doesn't prohibit that.

3 Q But UPR does prevent publishers from setting a higher
4 price -- a higher floor for AdX than for other exchanges;
5 correct?

6 A UPR doesn't allow publishers and AdX -- in Ad Manager
7 to set different floor prices for different exchanges. It
8 just sets one floor price.

9 Q And there's no way for publishers to use any
10 combination of floor tools in Google Ad Manager or other
11 third-party exchanges to set a higher floor for AdX than for
12 other exchanges after UPR; correct?

13 A There is using the header bidding prices.

14 Q That's the boosting thing we talked about before?

15 A That's right.

16 Q Setting boosting aside, there's no way after UPR for
17 publishers to use any combination of floor tools to set a
18 higher floor for AdX; correct?

19 A Setting aside the way you can do it with boosting,
20 there's no way to do it, yes.

21 Q Okay. You also referred to UPR as nefarious; is that
22 right?

23 A I don't recall referring to them as nefarious myself.

24 Q Let's turn to PTX 699, which has already been admitted.

25 A 699. Okay.

1 Q It should be, I believe, the next one after the one we
2 were just talking about.

3 A Yeah, I found it.

4 Q Okay. This is an email. The top email is from you to
5 a variety of Google employees; is that right?

6 A That's right.

7 Q There's a sort of large paragraph that begins with
8 Number 1 followed by Number 2; do you see that?

9 A Yes, I do.

10 Q The third from the last line reads: "It would be
11 viewed as a pure loss of functionality that we're doing for
12 our own perceived nefarious/self-serving reasons"; do you
13 see that?

14 A Yes, I do.

15 Q And here you're referring to UPR; correct?

16 A Wait. But as I said, I didn't refer to it as nefarious
17 myself, but a perception that other people might have.

18 Q Okay. You believe that there might be a perception by
19 publishers that UPR was nefarious; is that right?

20 A If we had launched UPR in a different way, then I
21 believe I was saying that that might be perceived as
22 nefarious, not the thing that we actually did.

23 Q And so part of what you're saying here is that with the
24 way that Google actually launched UPR, it launched UPR at
25 the same time as the Unified First Price Auction; is that

1 right?

2 A That's correct.

3 Q And the concern that you were expressing here was that
4 if Google launched UPR after the Unified First Price
5 Auction, it would be harder to do that; right?

6 A Yes. I believe I was saying that people would perceive
7 it as something that didn't make as much sense as if we did
8 it together.

9 Q Okay. So you were bundling together a series of
10 changes; is that right?

11 A Yes, that's correct.

12 Q And you were worried that if you did only the UPR
13 change by itself, that would be perceived as nefarious or
14 self-serving; correct?

15 A No, that's not quite right.

16 Q But that is what you write here?

17 A No, that's not right.

18 Q You write that if Google were to launch UPR after the
19 Unified First Price Auction, that could be perceived as
20 nefarious; correct?

21 A Right. But that would be in a context after the
22 first-price auction. If we did UPR only by itself, then I
23 think that it would have been seen differently. But there's
24 a difference between doing it only by itself, doing it with
25 the first-price auction, and doing it after all. Three of

1 these are different.

2 Q One last question and you can set this document aside.

3 You talked about holdback experiments; do you
4 remember that?

5 A Yes, I do.

6 MR. VERNON: Let's turn to PTX 1631, which the
7 United States would move to admit.

8 THE COURT: Any objection?

9 MR. MAHR: No objection, Your Honor.

10 THE COURT: All right. It's in.

11 (Plaintiffs' Exhibit Number 1631 admitted into evidence.)

12 BY MR. VERNON:

13 Q Let me know when you're there.

14 This is an email reporting on the holdback
15 experiment for the Unified First Price Auction; is that
16 right?

17 A It might be from the holdback. It's not completely
18 clear to me that this comes from the holdback, but it could
19 be.

20 Oh, I see. There's a part of it that does refer
21 to a holdback. So that -- it's likely that most of it is
22 from the holdback.

23 Q Are you aware of any experiments about the effects of
24 last look or UPR after this document?

25 A After this document, no, I'm not.

1 Q Let's turn to the third bullet point that -- I'm sorry,
2 the second bullet point that says: "AdX and header bidding
3 are filling more queries"; do you see that?

4 A Yes, I do.

5 Q The next bullet point reads: "HB" -- that probably
6 refers to header bidding; fair?

7 A Yes.

8 Q "HB lift can be attributed to last look removal"; is
9 that right?

10 A Yes.

11 Q So this holdback experiment, which is the last
12 experiment that you're aware of, concluded that after Google
13 removed last look, that led to a lift in header bidding; is
14 that fair?

15 A Yes, that's right.

16 Q Okay. Let me ask you about --

17 THE COURT: Let me ask a question.

18 What does AB stand for in that --

19 THE WITNESS: AB stands for Authorized Buyers,
20 Your Honor.

21 THE COURT: Thank you.

22 THE WITNESS: The other -- in this case it's
23 saying that Google Ads and DV360 lost some revenue to other
24 buyers on AdX.

25 THE COURT: Thank you.

1 BY MR. VERNON:

2 Q Authorized Buyers would be DSPs other than DV360; is
3 that right?

4 A No. We often include DV360 and Google Ads as well.
5 Sometimes we exclude them and sometimes not depending on the
6 context.

7 Q Okay.

8 A But in this case it's saying the others.

9 Q Okay. Let's talk briefly about your chats.

10 You're aware of the policy Communicate With Care;
11 is that right?

12 A I have in the past taken Communicate With Care
13 training, yes.

14 Q And Communicate With Care was something you took
15 seriously at Google?

16 A Yes. In that I tried to communicate carefully.

17 Q How many times did you take the training?

18 A I don't recall. It's been many years since I took it.

19 Q You were aware that -- and you turned history on; is
20 that right?

21 A Chat history, you mean?

22 Q Right.

23 A Yes. I generally do turn chat history on.

24 Q But you were aware that many other people at Google did
25 not turn history on; correct?

1 A In general, it varied by the individual.

2 Q But there were some people that did not turn history
3 on; is that right?

4 A It was up to each Google employee's choice.

5 Q Other Google executives sometimes set up chats without
6 you so they could turn history off; correct?

7 A I think there were some cases where people were having
8 personal conversations, and I tried to keep chat history on
9 by and large for all conversations, that if people didn't
10 want recorded, they might have a conversation without me.

11 MR. VERNON: Let's turn to PTX 911, which the
12 United States would move to admit.

13 THE COURT: Any objection to 911?

14 MR. MAHR: No objection, Your Honor.

15 THE COURT: All right. It's in.

16 (Plaintiffs' Exhibit Number **911** admitted into evidence.)

17 BY MR. VERNON:

18 Q Let me know when you're there.

19 A I found it.

20 Q This is a series of chats involving you and others at
21 Google; is that right?

22 A That seems to be right.

23 Q And this relates, among other things, to the cookie
24 deprecation issue? If it helps, page 3 I think -- or the
25 page ending in 534 refers to an article that seems to be

1 talking about that.

2 A Yes. Yes, I see.

3 Q And you were aware that there were concerns that cookie
4 deprecation would hurt other ad tech companies; is that
5 right?

6 A I think there were concerns about the impact on all
7 advertising systems, including Google's.

8 Q Right. But also other ad tech tools; correct?

9 A Yes, all of them.

10 Q Let's look at the very -- the second to the last
11 message from C Bindra on page 534.

12 A Yes.

13 Q That is, I think, Chetna Bindra; is that right?

14 A That's right.

15 Q She was the senior product manager for user trust and
16 privacy; is that right?

17 A I don't recall her exact title, but that may be right.

18 Q Do you recall whether she was on a litigation hold at
19 the time of this chat?

20 A I have no idea, no.

21 Q She writes: "Let's do a ping thread with history off
22 and without Nitish"; do you see that?

23 A Yes, I see that.

24 Q Did you object? Did you say that they should not do a
25 history off thread without you?

1 A No. I think we were talking about some rants looking
2 at this now. So, no, I didn't object.

3 Q Let's turn to the next page, 535.

4 At the very top you write: "Yeah, you all totally
5 should"; do you see that?

6 A Yes, I do.

7 Q About half of the way down the page, there's a message
8 from a Lassie at Google; is that right?

9 A Brad Lassie, yes.

10 Q Brad Lassie.

11 He also worked on cookie deprecation at the time?

12 A I believe that's correct.

13 Q He writes: "I am not on lit hold"; do you see that?

14 A Yes.

15 Q And then he adds: "Kind of amazingly"?

16 A Yes.

17 Q Let's turn to the page ending in 538.

18 About halfway down there's a series of messages
19 from Ms. Bindra; do you see that?

20 A Yes.

21 Q They say: "Folks, this thread has history on. We
22 better get our act together. Please be cautious"; do you
23 see that?

24 A I think those are out of order in that the "we better
25 get our act together" is not a response to the previous

1 message, but I do see that.

2 Q Okay. And then if you look at the next page, this
3 series of messages ends shortly after that; correct?

4 A Yes.

5 Q You can set that aside.

6 Google's Communicate With Care policies encouraged
7 executives not to use certain language in written
8 communications; correct?

9 A I don't recall the Communicate With Care because it's
10 been many years, but I think that's broadly right.

11 Q Google employees were warned that a failure to
12 communicate with care could result in disciplinary action;
13 correct?

14 A I don't recall that, no.

15 Q Let's turn to the last document in your binder, it ends
16 in 3887. Let me know when you're there.

17 A Yes.

18 MR. VERNON: The United States will move to admit
19 this as PTX 2000. It's not on the exhibit list.

20 THE COURT: Any objection?

21 MR. MAHR: It's not on the exhibit list, Your
22 Honor.

23 THE COURT: It's not on the -- then it's not
24 coming in.

25 MR. VERNON: Okay. We will do it as impeachment.

1 BY MR. VERNON:

2 Q This is a presentation about Google's Communicate With
3 Care policies and practices for responding to regulatory
4 inquiries; is that right?

5 A I haven't looked at it, but I can look at it now.

6 MR. MAHR: I'll object to it as impeachment. I
7 don't know what he's impeaching.

8 THE COURT: Sustained.

9 MR. VERNON: Your Honor, if I may --

10 THE COURT: Ask the question that you think this
11 might impeach.

12 MR. VERNON: Okay.

13 BY MR. VERNON:

14 Q Google employees were warned that disciplinary action
15 could result if they failed to follow the Communicate With
16 Care policies; correct?

17 A I said I don't recall.

18 Q Okay. So let's look at the page ending in 910. It
19 starts with Communicate With Care.

20 MR. MAHR: Your Honor, objection. This would be,
21 at best, refresh recollection.

22 THE COURT: That's all. That's all it would be.
23 Yeah. So he can look at it. It's not coming in.

24 MR. VERNON: Okay.

25 BY MR. VERNON:

1 Q Mr. Korula, there's a page ending in 910 that begins
2 with the words "Communicate With Care" at the top.

3 A Yes.

4 Q Please look at the first -- the full paragraph that's
5 second to the bottom in the comments that starts with "in
6 addition to providing an update"; do you see that?

7 A Yes.

8 Q Read that silently to yourself, the whole paragraph.

9 A Okay.

10 Q Does this refresh your recollection that Google
11 employees were told that if they failed to follow the
12 Communicate With Care policies, disciplinary action could be
13 taken?

14 A I still don't have any recollection of this fact. It
15 may be true, but I -- I don't recall it, and it's not the
16 material that was on the slide itself. So these are speaker
17 notes that I don't know if they were used. I'm sorry. I
18 just don't recall.

19 THE COURT: All right. It does not refresh his
20 memory.

21 MR. VERNON: No further questions. Or I pass the
22 witness, Your Honor.

23 THE COURT: All right. Any redirect?

24 MR. MAHR: Thank you, Your Honor. May I proceed?

25 THE COURT: Yeah.

REDIRECT EXAMINATION

BY MR. MAHR:

Q I want to take you back, Mr. Korula, to PTX 1144, which I believe is in the small black binder. Small white binder.

A Yes.

Q And taking you to page 2 and 3 -- page 2 to common misconceptions.

A Yes.

Q Do you see that?

A Yes, I do.

Q And could you read the sentence that begins AdSense?

A "AdSense, AdMob and Ad Manager publishers have access to the same premium Authorized Buyers."

Q And that sentence corrects the common misconception above that.

Can you read that, please.

A "Ad Manager serves higher-quality ads." And it says that's not true.

Q Does AdSense connect to the same demand sources as Google Ad Manager?

A All the same Authorized Buyer sources, Google Ads, DV360, the other Authorized Buyers. It does not connect to Open Bidding buyers, for example.

Q But all the same Google Ads demand?

A Yes, that's right.

1 Q And AdSense -- can AdSense be used with a third-party
2 ad server?

3 A Yes, you can.

4 Q So what demand sources does a publisher have access to
5 if they call AdSense from a third-party ad server?

6 A All the same AdSense demand sources, Google Ads, DV360,
7 all of the other Authorized Buyers.

8 Q If you would turn to the first page of PTX 1144. At
9 the bottom, the last sentence, can you tell us what that
10 says about the inventory types available on Google Ad
11 Manager?

12 A Yeah. It says -- it refers to many different inventory
13 types like websites, mobile apps, videos or games. There
14 are others as well not listed here.

15 Q And if we could -- the second thing you were asked
16 about was Slide 22.

17 MR. MAHR: If you could pull up Slide 22 in our
18 demonstratives. It's the next one. It's the one with what
19 I will refer to as the pumpkin-colored cylinder as fourth.

20 BY MR. MAHR:

21 Q And you were asked some questions by Mr. Vernon
22 about -- he asked you whether historic averages were the
23 same thing as static bids; do you recall that?

24 A Yes.

25 Q Is there any actual bid done by -- was that an accurate

1 term for the historical average?

2 A No, that's not quite an accurate term, no.

3 Q Is historical average even an accurate term?

4 A No, it's not. It could be a historical average, but
5 the publisher could enter anything they want.

6 Q Okay. Anything it wants. It doesn't have to be a
7 historical average, it doesn't have to be a static bid?

8 A No, it does not.

9 Q And he also asked you if AdX got the first chance to
10 run a real-time auction and submit a bid; do you recall
11 that?

12 A Yes.

13 Q And is it true that actually AdX is the only exchange
14 to submit a real-time bid -- gets an opportunity to submit a
15 real-time bid?

16 A Yes, that's right because at this time the other
17 exchanges were not submitting real-time bids.

18 Q And why weren't they submitting real-time bids?

19 A Well, I mean, that's really up to them. I presume it
20 wasn't a priority for them to develop given all of the other
21 things they were working on as this industry was rapidly
22 evolving.

23 Q Again, to be clear, if they were able to submit
24 real-time bids, would AdX have been able to accept them?

25 A Yes. Using the exact mechanism that they used when

1 they did eventually develop real-time bids. And I should
2 say Google Ad Manager would accept them, because those would
3 come into the DFP part.

4 Q Okay. If you would go to the other binder, the
5 slightly larger binder, and PTX 797. That was the SWAT
6 analysis; do you recall that?

7 A Yes, I do.

8 Q At 797, page 2, Bates ending 166; do you see that?

9 A Yes.

10 Q And under strengths, Mr. Vernon asked you about the
11 second strength, access to unique demand; do you see that?

12 A Yes, I do.

13 Q And then the description says: "GDN/GMob demand is
14 relatively unique."

15 Can you explain to us what it means to say it's
16 relatively unique?

17 A Well, here, GDN or GMob demand refers to the
18 advertisers who are using those products, right, the
19 customers of these products. And I believe that I wrote
20 relatively unique, as I'm reading this now, to imply that
21 it's not that those advertisers couldn't use other products
22 or weren't using other products at all, but perhaps the
23 overlap was not 100 percent. So many of those advertisers,
24 but perhaps not all, would be using other buying tools as
25 well.

1 Q Did Google take any action in connection with any of
2 the optimizations, features, tools that we've discussed in
3 your testimony, did any of those in any way prohibit
4 advertisers from using any other rival's products?

5 A No. I'm certainly not aware of any such thing.

6 Q Okay. If we could then move to PTX 555. In the same
7 binder, I believe. And this was the Yavin discussion.

8 A Yes.

9 Q And let me get there. The author of this email is Ezra
10 Brettler.

11 Do you know Ezra Brettler?

12 A I do not, no.

13 Q Can you tell by the second page of this exhibit what
14 Ezra Brettler's position is at Google?

15 A He appears to be a financial analyst.

16 Q Okay. And then going to the section referred to -- in
17 Mr. Vernon's question, which is at the top of the second
18 page of the exhibit ending 116. "This point that the
19 financial analyst, Mr. Brettler, makes about Demand Product
20 probably won't require much optimization."

21 You wanted to give a comment on that and weren't
22 able to during Mr. Vernon's examination. Could you give
23 that comment now?

24 A Sure. Mr. Brettler really didn't understand the nature
25 of the work that would be involved. In fact, a very, very

1 large part of all of the work on Demand Product was
2 optimization. It took a substantial amount of effort. And
3 the reason that I believe that Google ultimately didn't
4 proceed with this product was because the effort was just
5 not worth the cost. But, as I say, I don't know for sure.

6 But also, more fundamentally, I think this point
7 illustrates the broader point I was trying to make, that the
8 work for Demand Product was really Google Ads and DV360
9 submitting bids into these other ad servers. Those are
10 products that bid into other exchanges. They don't need to
11 develop this technology for their bids not knowing whether
12 their bids win or not because that's what DV360 does, it
13 submits bids into other exchanges, and it finds out later
14 whether they won or not.

15 That's not what AdX does. So the work that would
16 be required for AdX would be very different.

17 Q And would it be substantial?

18 A Yes. As I testified that I believe would be years of
19 work. For that matter, even Demand Product ended up taking
20 years of work, but the AdX would be even more substantial.

21 Q You were asked a number of questions about chats.

22 Do you recall when you received a litigation hold
23 in this matter?

24 A I believe it was in October 2019.

25 Q And when you received that litigation hold, did you

1 change your practices with respect to your use of chats?

2 A I had always been somewhat likely to turn chat history
3 on, but I almost universally turned chat history on
4 subsequently. I should say I universally turned it on and
5 then occasionally in a personal conversation, I might turn
6 it off.

7 Q And did you ever use chat with history off in order to
8 avoid creating a document that could be used as evidence in
9 litigation against Google?

10 A Absolutely not.

11 Q When you received a litigation hold in this matter, did
12 you change your practices with respect to the
13 attorney/client privilege?

14 A No, I don't believe that I did.

15 Q Did you ever mark a document or communication
16 attorney/client privilege in order to keep that document
17 from being used in litigation against Google?

18 A I did not. And it's my understanding that my marking
19 such a document wouldn't affect whether it was disclosed or
20 not.

21 Q Finally, Mr. Vernon asked you about a bundle of changes
22 that came along with the Unified First Price Auction; do you
23 recall that?

24 A Yes, I do.

25 Q And he asked you several questions about whether it

1 would have been, I think he used the words unduly difficult
2 to design Google's Unified First Price Auction, and in a
3 couple of different ways it would benefit its competitors;
4 do you recall those questions?

5 A I don't believe he actually asked me a question about
6 it beyond saying that I didn't testify that it would be
7 unduly difficult.

8 Q Okay. Do you recall the subject?

9 A I do recall the subject.

10 Q And in transitioning to a Unified First Price Auction,
11 was Google trying to design an auction that would better
12 serve the interests of its competitors?

13 MR. VERNON: Objection. Leading.

14 THE COURT: Sustained.

15 BY MR. MAHR:

16 Q What was Google's objective in trying to achieve --
17 what was Google trying to achieve through its move to a
18 Unified First Price Auction?

19 A Google was to offer a better product to our customers
20 to eliminate much of the complexity that had led to
21 inefficiencies to just make it better for publishers and
22 buyers.

23 MR. MAHR: That's all I have, Your Honor.

24 THE COURT: All right. How long do you think your
25 recross is going to take?

1 MR. VERNON: Five-ish minutes.

2 THE COURT: I think it makes sense to try to
3 finish this. All right. Before we take a lunch break.

4 RECROSS-EXAMINATION

5 BY MR. VERNON:

6 Q Let's start with AdSense.

7 AdSense does not return a price -- a real-time
8 price to third-party ad servers; is that correct?

9 A That's correct.

10 Q So a publisher cannot use AdSense to compare a
11 real-time price from AdSense to a real-time price from some
12 other exchange; is that correct?

13 A That is also correct, which is the case also when you
14 use AdSense with Google Ad Manager.

15 Q You also -- when you were discussing your demonstrative
16 about the waterfall, the words historical averages appeared
17 next to the exchanges other than AdX; do you remember that?

18 A Yes, I do.

19 Q And I think you said that publishers didn't have to use
20 the historical average; is that right?

21 A That's right.

22 Q But it's fair to say that the reason that you used the
23 phrase historical average on that slide is, it was a common
24 way; right?

25 A I believe that the reason that I used the historical

1 average on that slide was because, as I mentioned, I was
2 trying to keep it as close as possible to the slide that the
3 government used in this case.

4 Q You're aware it was common for publishers to set their
5 VCPMs at that time based on historic averages; correct?

6 A That was definitely one of the common practices.

7 Q Okay. You also talked about whether exchanges lower in
8 the waterfall after AdX would submit real-time bids; do you
9 remember that prior to header bidding?

10 A That's right. But it had nothing to do with lower or
11 higher. The exchanges were not submitting real-time bids.

12 Q Okay. So let's talk about what happens in the
13 pre-header bidding period when AdX has the first chance and
14 it doesn't win the impression. Are you with me so far?

15 A Yes.

16 Q Then that impression passes to the next exchange in the
17 waterfall; is that right?

18 A Yes. It goes to the first exchange in the waterfall.

19 Q That exchange then runs its own real-time auction; is
20 that right?

21 A Yes.

22 Q If real-time in that auction for that exchange returns
23 a price that is higher than the floor, then the buyer from
24 that exchange would win at that price that's higher than the
25 floor; correct?

1 A Yes. They wouldn't return that price, but if that
2 exchange had a price higher than the floor, then they would
3 typically respond, yes. They didn't have to. They would
4 typically respond yes, and a buyer from that exchange would
5 win at that price higher than the floor.

6 Q And so they would pay that price that's higher than the
7 floor, they just wouldn't inform DFP; is that what you're
8 saying? Of the price.

9 A They wouldn't even inform the publisher.

10 Q Right. But the price that that exchange would pay
11 would be higher than the floor; is that fair?

12 A Yes.

13 Q Okay. And there was no way prior to header bidding for
14 a third-party exchanges to run a real-time auction before
15 AdX ran its real-time auction; correct?

16 A There was no way to do it prior to header bidding,
17 that's true. But header bidding was the way to do it.

18 Q Okay. Let's turn to -- you also talked about the
19 difficulty that would result to Google in developing the
20 ability to pass real-time bids from AdX; do you remember
21 that?

22 A Yes, I do.

23 Q You are aware that many other exchanges submit
24 real-time bids to DFP; is that fair?

25 A Yes.

1 Q All of those exchanges developed that capability many
2 years ago; correct?

3 A Yes, I believe that's right.

4 MR. VERNON: No further questions. Thank you,
5 Mr. Korula.

6 THE COURT: All right. Then we'll be on break
7 until five after 2 for lunch.

8 Is anyone going to call this witness again during
9 the course of the proceeding?

10 MR. VERNON: Not plaintiffs, Your Honor.

11 THE COURT: What good Google?

12 MR. MAHR: We may, Your Honor.

13 THE COURT: Then I can't excuse you as a witness.
14 You'll need to leave, and you cannot discuss your testimony
15 with any witness who has not yet testified. Just make sure
16 you stay in touch with counsel. They'll let you know if
17 you're needed back again.

18 All right. Thank you.

19 THE WITNESS: Thank you, Your Honor.

20 THE COURT: We'll be on lunch break for an hour.

21 (Court recessed for lunch at 1:05 p.m.)

22 -----
23 I certify that the foregoing is a true and accurate
24 transcription of my stenographic notes.

25 Stephanie Austin

Stephanie M. Austin, RPR, CRR